THE DEVELOPMENT OF GUIDELINES FOR DESIGNING DIGITAL MEDIA TO ENGAGE VISITORS WITH NON-VISIBLE OUTDOOR HERITAGE

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VOLUME I of 2

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Abstract

This PhD investigates the role of digital media in optimising visitor engagement with non-visible outdoor heritage. Motivated by concerns that digital media products developed for the heritage sector might not be reaching their potential to enrich the visit experience and concerned about a lack of clarity as to what constitutes visitor engagement; this thesis proposes guidance for the production of interpretive digital media and a framework for visitor engagement.

Cultural heritage sites featured in this study are characteristically outdoor locations; frequently non-stewarded with very little tangible evidence of the historical or cultural relevance of the site. The unique potential of digital media products to address the specific challenges of engaging visitors with invisible heritage in these locations is discussed within this thesis.

The practice of interpreting heritage is investigated to identify the processes, stages, experiences and behavioural states associated with a high level of engagement. Visitor engagement is defined in this study as being a transformational experience in which the visitor's emotional and/or cognitive relationship with the heritage is altered. This is achieved when the visitor sufficiently experiences appropriate states of engagement across all stages of the visitor engagement framework.

This study proposes guidance to advise and support heritage professionals and their associated designers in the design, development and implementation of interpretive digital media products. Within this guide sits the *engagement framework* which proposes a framework for engagement, defining the stages (process) and the states (experiences and behaviours) of visitor engagement with cultural heritage. In using this resource the cultural heritage practitioner can be confident of their capacity to run and deliver interpretive digital media projects regardless of their expertise in design or technology.

This thesis proposes that well designed interpretive digital media can optimise the engagement of visitors in ways which cannot be achieved by any other single method of

interpretation. This PhD contributes a *design guide* and an *engagement framework* to the existing field of knowledge regarding interpretive digital design.

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Abbreviations

AAR	Audio-Augmented Reality
ACE	Arts Council England
ADH	Affective Digital Histories
AHRC	Arts and Humanities Research Council
AR	Augmented Reality
CASE	Culture and Sport Evidence
CI	Co-Investigator
CSCW	Computer-Supported Cooperative Work
DBHP	Digital Building Heritage Project
DCMS	Department for Culture Media and Sport
EH	English Heritage
ESRC	Economic Social Research Council
GEW	Geneva Emotion Wheel
GPS	Global Positioning System
HCI	Human computer interaction
HLF	Heritage Lottery Fund
MLAC	Museums, Libraries and Archives Council
MMOG	Massive Multiple On-line Games
NCCPE	National Co-ordinating Centre for Public Engagement
PDA	Personal Digital Assistant
PI	Principal Investigator
SID	Sonic Interaction Design
SOP	Standard Operating Procedure
SUS	System Usability Scale
TDFIDM	Theoretical Design Framework for Interpretive Digital Media*
UCD	User Centred Design
VIS	Visitor Interest Survey
VR	Virtual Reality

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1 Chapter One: Introduction

1.1 Introduction

This PhD study investigates the role of digital media in facilitating visitor engagement with non-visible outdoor heritage. Focussing on the relationship between the visitor and the heritage location this study proposes that the level of visitor engagement is increased by the use of traditional non-digital curated interpretation and can be deepened further when digital media is used to provide the interpretation, figure 1-1, page 1-1.

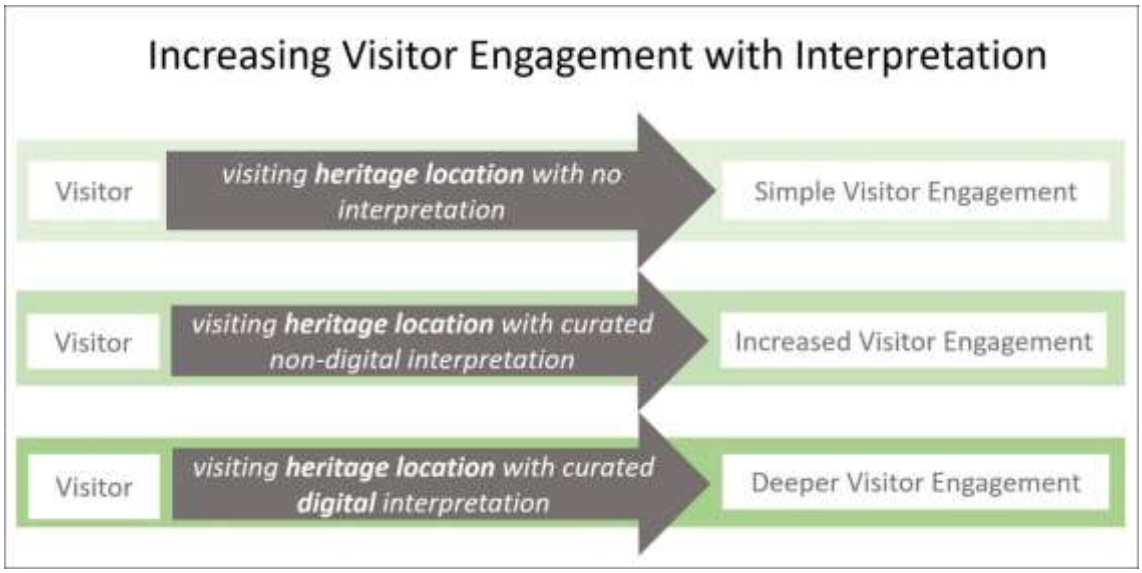


Figure 1-1 Visitor Engagement (Wilkinson, 2018)

Engagement can be defined essentially an interactive experience during which a human actor relates to an object. In this study the human actor is the visitor and the object is the cultural heritage site. The engagement experience can result in a visceral, behavioural and or reflective response by the visitor (Norman, 2004) and can impact the visitor both cognitively (Bitgood, 2014) and or emotionally (Costello, 2007). Engagement is both interactive (Leadbeater, 2009), and transformative (Bilda, 2008) altering the relationship the visitor has with the heritage in terms of personal knowledge, attitude and or appreciation. Engagement is experienced in stages which occur sequentially (Edmonds 2006, Bilda 2008) and can be mapped to visitor trajectories (Fosh, 2013).

Engagement can have legacy beyond the physical encounter (Everett, 2009) and support an on-going relationship between the visitor and the heritage.

Visitor engagement can be observed through a variety of behavioural states exhibited by the visitor as they seek to make meaning and sense of the heritage (McCarthy and Wright 2003, Falk 1990). Typical measures for assessing visitor engagement include attraction power and holding power (Serrell, 1997, Bollo, 2005, Lanir 2013, Bitgood 2014), dwell time (Gutwell, 2006) and visitor use of materials (Morris et al, 2005) although there is argument as to whether length of stay is a consistent measure of either high or deep engagement (Screven, 1999, Tisdal, 2004). Richer engagement has been described as deeper connection through increased participation and sharing (Coifi, 2012), or the extent to which the visitors use the exhibit as the designer intended (Sanford 2010, Anshacher 1999). This study seeks to clarify what is meant by the term visitor engagement by defining the stages of engagement and the associated behavioural states required to achieve a satisfactory level of visitor engagement.

In the context of this study the term interpretation refers to any curated content provided by cultural heritage practitioner which is designed to help visitors develop their understanding and appreciation of the heritage. According to the Heritage Lottery Fund (2013) a good interpretive experience is one in which people have learned about heritage and had an enjoyable experience. Similar to engagement it has both a cognitive and emotional dimension. Interpretation should be a relevant and authentic representation of the heritage. It should mean something to the visitor and provoke some sort of response. It is not just about information, but must include information (Tilden, 1957). Learning is central to interpretation and is driven by the visitors' motivation to learn (Kelly, 2007). Interpretation therefore has to be able to reach a non-captive audience (Ham, 2013) who have no need to learn, but are interested (Kulfick, 2011) and are motivated by curiosity (Rounds, 2004). Like engagement good interpretation should provide a transformative experience where the value is not in the facts but in the effect the experience has on the interest and appreciation of the visitor (Lord, 2007). Interpretation is personally motived with a focus on the visitor's control

over their meaning making (Falk and Deirking 2000, 2012). Effective interpretation provides opportunities to explore and supports individual agendas with multiple pathways, self-paced routes and personal learning choices (Fleming and Baume, 2006, Black 2012). Interpretation is enhanced by social interaction (Kelly 2007) and active participation (Roussou 2010, Perry 2011). This study seeks to determine how interpretive content provided in a digital format, referred to as interpretive digital media, can deepen visitor engagement.

Digital products featured in this study are location-based and typically include mobile smart phones. They use digital techniques to deliver mixed digital media content directly to a person on location and have the capacity to address many of the features required for interpretation and visitor engagement. Digital products can facilitate visitor choice and support individual preferences by providing personal explorative pathways (Behrandt 2012, Bedwell 2015, Vazquez-Alverez 2015) and by using mixed media, such as audio and visual, to address individual learning styles (Kolb 1984 and 1999, Fleming). Connection to the heritage is enhanced by being on location (Messeter 2009) allowing the visitor to contextualise their experience (Clough 2010, Land and Zimmerman 2015). Opportunities for people to contribute by adding user-generated content increases social interaction between visitors (Kefalidou 2012). Immersive features such as sound, dramatisation and games increase dwell time and deepen experiences by provoking curiosity, generating interest and creating enjoyment (Reid 2005, Bellagas 2007, Gaver 2007, Carrigy 2010, McGonigal 2011 and Hazzard 2015).

Cultural heritage sites featured in this study are characteristically outdoor locations; frequently non-stewarded with very little tangible evidence of the historical or cultural relevance of the place. Visitors featured in this study are people who are present at the heritage site, although their motives for being there are mixed and they may or may not be predominantly there to experience the heritage.

The potential for interpretive digital media to address the challenges of presenting ‘invisible’ heritage in non-stewarded spaces to people who may or may not be visiting the site to experience the heritage is explored within this thesis.

The term visitor engagement is investigated with the intention of providing an understanding which will inform and support sector professionals and academics working in this field by defining the processes and behavioural states associated with a high level of visitor engagement.

As a result of the research this study proposes guidance, also referred to as the Guide, to support heritage professionals and digital designers in their decisions and choices regarding the production of interpretive digital media products. Within this guidance is a visitor engagement framework which defines the stages (process) and states (experiences and behaviours) of visitor engagement . Visitor engagement is defined in this study as being a transformational experience in which the visitor's emotional and/or cognitive relationship with the heritage is altered. This is achieved when the visitor sufficiently experiences appropriate states of engagement across all stages of the proposed visitor engagement framework.

1.2 Background to the study

To provide context the motivation of the researcher and the relationship to previous work is now described.

1.2.1 Context

Spanning six years this PhD has been conducted throughout a period of immense technological development regarding interpretive digital media, both in terms of functionality and user acceptance. The growth of mobile phones apps and other digital technologies, such as location awareness and augmented reality, has increased the capacity of digital media to provide rich forms of interpretation for cultural heritage. The tension between what is technologically possible and what is actually useful to the visitor continues.

Katz et al. (2011) argue that technology has so far failed to transform the interpretive landscape in museums, whilst De Freitas and Veletsianos (2010) promote the view that activities such as virtual worlds have potential to increase learner empowerment and participation. It is argued that museums wishing to increase engagement should adopt

audience centred approaches to interpretation (Black, 2005). Kelly et al. (2002) contend that modern audiences require customised personal involvement and that a museum experience should provide self-reflective content with active learning opportunities through contemporary modes of information exchange. An audience centred approach corresponds with interaction design principles where the focus is on people and how they interact with a product (Saffer, 2007). User centred and human computer interaction design emphasise the needs and goals of the end user, and provide new ways of connecting people to people (Benyon, 2010). Poor interaction design can leave the user confused, irritated and disinterested (Preece et al., 2002). Technology can get in the way of people and the things they want to do (Norman, 1988). This study seeks to address this issue by providing research based evidence to identify the key features required to create digital interpretive media which will optimist the engagement of the visitor with the cultural heritage.

1.2.2 Motivation and problem identification

Initial motivation for this study was derived from concerns held by the researcher that interactive and interpretive digital media in museums was not reaching its potential and that the development of digital products was perhaps more of a fad and a whim than a genuine opportunity to improve the visitor experience. Whilst there were significant examples demonstrating the growth of digital media in museum spaces, such as the *Street Museum* mobile phone app at the Museum of London (Museum of London, n.d.), the *Living Worlds* mobile phone app at Manchester Museum (Manchester Museum, n.d.), augmented reality dinosaurs at the Royal Ontario Museum (ROM, n.d.), and the 15 meter-long 'Lifeline Table', figure 1-2 page 1-6, at the Cabinet War Rooms in London chronicling the major world events and activities in the life of Winston Churchill (Imperial War Museum, n.d.) there was limited research evidence to demonstrate the positive impact of these implementations.

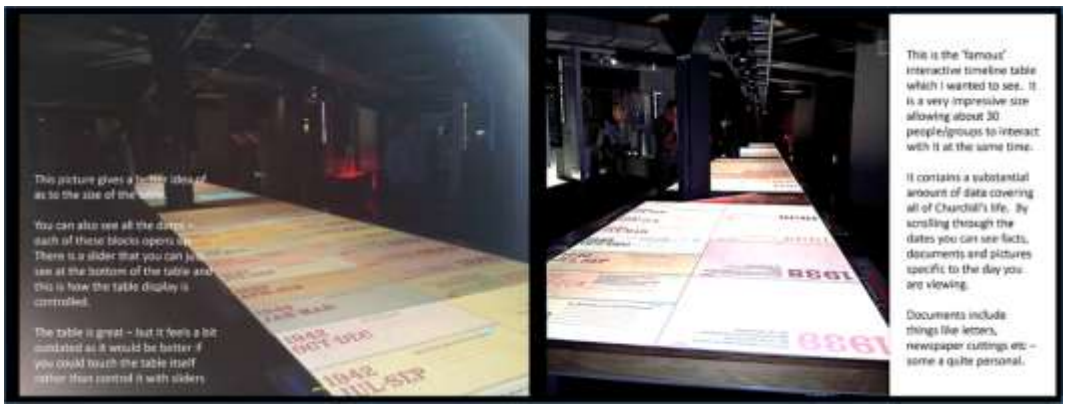


Figure 1-2 'Lifeline Table' Cabinet War Rooms (Wilkinson, 2012)

Since the commencement of this study in 2012 the conversation on the impact and effectiveness of digital products within the museums and heritage sector has grown and there are now a variety of papers and projects which have considered the potential of digital items such as multi-tables (Zaharias et al., 2013; Goldman and Gonzalez, 2014; Ma et al., 2015). Blogs and commentary from within the sector have however raised concerns about the lack of research based evaluation of digital products and the amount of money spent on digital projects with uncertain or limited return on investment (Green et al., 2013; Cooke, 2014; Henson, 2016).

Personal and casual observations by the researcher at the start of this investigation presented a mixed picture of visitor acceptance and usage regarding mobile phone apps and digital media within the context of museums and heritage. Excellent examples, such as the *Extraordinary Heroes Exhibition* in the Lord Ashcroft Gallery (Imperial War Museum, n.d.), demonstrate the ease with which visitors can investigate the lives and experiences of recipients of the Victoria Cross by accessing rich content delivered through interactive digital media, figure 1-3 page 1-7; but this sits alongside possibly less successful examples, such as the massive digital tables at the National Space Centre in Leicester which, when observed by the researcher, were largely ignored by the visiting groups of children who appeared more excited by the size and darkness of the gallery space and the opportunity this afforded for running around and hiding from their teachers.

Figure 1-3 'Extraordinary Heroes', Imperial War Museum (Wilkinson, 2014)

Some instances of digital interpretation appeared almost 'hidden' in their location; for example a digital table situated in a very dark and uninviting room at the Museum of London. Others seem unused and 'ignored', like the battle games at the Royal Armouries Museum in Leeds. Notices apologising for the 'broken' appeared prevalent, figure 1-4, page 1-7.

Figure 1-4 Hidden, Ignored, Broken (Wilkinson, 2014)

Additional to this the researcher also witnessed significant disparity in visitor behaviour regarding the usage of digital interpretation; one interesting example being the behaviour of visitors at two similarly themed locations, the aforementioned *Extraordinary Heroes Exhibition* at the Imperial War Museum and the National Memorial Arboretum. Both locations present similar content focussing on militia and memorial and both offer interpretation through digital media however the experience of visitors to the Imperial War Museum was virtually seamless, with visitors accessing information

intuitively and almost without awareness of the digital intervention and the other the complete opposite, with visitors seemingly not knowing how to use the digital intervention and subsequently neglecting or refusing to engage with it.

Understanding visitor attitude towards digital interventions and the affordance people have of their own mobile phones and devices became a key factor in this investigation. One notable example was observed during a visit to the Museum of Manchester. The mobile phone app *Living Worlds* had been launched by the museum to provide information on the contents within the gallery cabinets. Despite heavy promotion of the app, with in-gallery posters, guidance from curators and specially employed staff proactively providing advice and support, figure 1-5 page 1-8, the researcher observed limited uptake of this opportunity with few people downloading the product or using it to explore the content in the museum. One family group, consisting of a male adult and two small children, came into the gallery and sat directly in front of one of the cabinets featured in the app. The male adult took out his mobile phone, signifying a level of personal comfort in using the technology, but instead of using it to view the app and share this with his family, he used his phone to listen to music and take photographs of the children before putting his phone away again, figure 1-5 page 1-8. The researcher did not do a systematic study of this app and it is possible that this experience was not representative of the product, but it did signal significant issues concerning the ways in which people expect and choose to use their own devices.

Figure 1-5 Living Worlds, Museum of Manchester (Wilkinson, 2012)

Curious to follow up on the experiences witnessed at the Imperial War Museum in London and the National Memorial Arboretum, and to explore further the potential of using digital media in the interpretation of military history, the researcher spent some time investigating the use of digital media within the military museums sector. However, with the exception of major museums such as the Imperial War Museum and the development of the National Civil War Trail mobile phone app (National Civil War Centre, n.d.) there was insufficient evidence of military museums using digital media to support any further research in this particular area, figure 1-6 page 1-9.

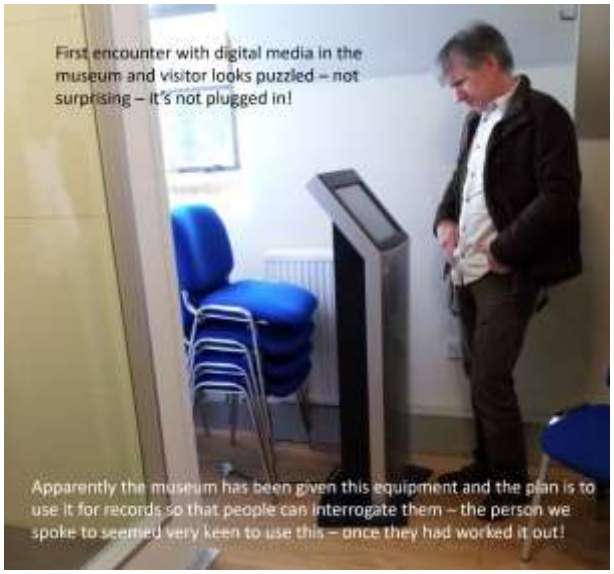


Figure 1-6 Thorsby Military Museum, (Wilkinson, 2013)

Moving on from the military museum sector the researcher began to focus on the issues faced by community based heritage groups in developing interpretive digital media . As part of this study the researcher formally reviewed the *Digital Building Heritage Project*, an Arts and Humanities Research Council (AHRC) programme of co-created digital projects linking the university and heritage sectors. This afforded the researcher the opportunity to observe the challenges associated with the development and implementation of interpretive digital media products and assess the impact of these products on the engagement of visitors to cultural heritage sites. The results of this evaluation raised questions about the importance of project management, objective setting and product specification which subsequently provided a new and additional focus for this thesis (Wilkinson and Higgett 2015).

Restrictions on researcher time, resources to travel and access to museums focussed the researcher on local, more easily accessible digital projects. This included a formal and substantive evaluation of mobile phone apps created for the Cultural Quarter in Leicester: an outdoor location with visible, but not obvious, heritage and only partial interpretation. This project is referred to within this thesis as the Mobile Apps Study. Concentration on similar sites became central to this investigation and the emphasis of the study was refined to focus on design decisions and creation processes for the development and implementation of digital media products for outdoor, non-stewarded heritage locations where the evidence is limited or non-existent.

The Mobile Apps Study highlighted the challenges of creating interpretation for situations where the motivation and needs of the visitor are unknown; and the consequent difficulties of relying substantially on user or audience centered design principles (Wilkinson, 2016). At this point in the investigation the significance of the location itself became paramount and so place centred design practices were incorporated into the study. Existing research on similar products was reviewed providing a body of case study evidence. An overview of these studies is outlined in 1.2.3 page 1-11. From this the researcher was able to build an understanding of existing knowledge regarding the nature of engagement where the motivations of the visitor is unknown and the location is external and un-stewarded, and identify gaps and areas for further investigation.

The nature and scope of this study is also predicated on the professional experience of the researcher which includes a 20 year career in adult professional development, incorporating a strong background in education, project management, systems analysis, interaction and experience design, user-centered design and significant interest and skills in historical research.

1.2.3 Relationship to previous work

This investigation draws on a wide range of academic disciplines including digital design, museum studies, interaction design, human computer interaction, place centred design, education, psychology, human geography and management studies as evidenced in the

review of the literature and professional practice (chapter two). To provide a focus for this study the parameters of the previous work and research reviewed by the researcher is limited to mobile digital products which operate in outdoor and in un-stewarded locations. Case studies are not restricted to heritage sites and the examples feature soundscapes, sculpture parks, cemeteries, gardens and tourism; but the core elements remain consistent enabling learned lessons to be shared.

Study/Product	Overview	Date	Reference
Cyberguide	Prototypes of mobile context aware tour guide.	1997	Abowd et al.
GUIDE	Hand-held context aware tourist guide for Lancaster.	2000	Cherverst et al.
Archeoguide	Personalise augmented reality tours of Olympia.	2001	Vlahkis et al.
The Savannah Project	GPS and PDAs creating a game environment for children to explore the Savannah.	2004	Facer et al.
"Riot" 1831	Location based virtual reality audio drama re-imagining the 1831 riots in Bristol.	2005	Reid et al.
"The Voices of Oakland"	Mobile audio tour of Oakland Cemetery, Atlanta.	2005	Dow et al.
"Frequency 1500"	A mobile city game for school children delivering historical knowledge regarding medieval Amsterdam.	2007	Huizenga et al.
REXplore	Mobile pervasive spell casting game for tourists to explore Regensburg, Germany.	2007	Ballagas et al.
"Explore!"	Virtual reality mobile phone game based exploration of archaeological ruins of Egnathia, Italy.	2008	Ardito et al.
"Viking Ghost Hunt"	Location based mobile app game based in Viking Dublin.	2010	Carrigy et al.
"The Westwood Experience"	A location based mobile phone app using mixed reality to connect participants to real locations.	2010	Wither et al.
"Time Warp"	Mobile outdoor mixed reality game exploring historical city of Cologne.	2012 2008	Blum; Herbst
"Virtual Excavator"	Interpretive, exploratory guide for visitors to Bar Hill fort, an un-stewarded site.	2012	McGookin et al.
"Holkenkollen Time Travel"	I-pad app allowing user to experience four different versions of the mountain through time.	2012	Orkelbog
"Reminisce"	Interactive digital installation at Bunratty Folk Park, Ireland.	2012	Ciofi and McLoughlin
Hidden Stories	Mobile story telling guide, Nottingham city and Castle.	2013	Fitzgerald et al.
Leicester Castle App	Story telling apps using beacons and locative media to present the history of Leicester Castle.	2015	Vavoula et al.
The Sound Garden	Discovery experience based in Municipal gardens, Funchal, Madeira, delivered through sound.	2015	Vazquez-Alvarez et al.
Musical Sound Track	A mobile adaptive musical sound track to enhance the experience of visitors to the Yorkshire Sculpture Park.	2015	Hazzard et al.

Table 1-1 Case study summary (Wilkinson, 2018)

A summary of the studies is outlined in table 1-1 page 1-11 and further explored in 2.5.3 page 2-84 where the potential for digital media to engage visitors by including features such as location based information, evocative sound, strong characters, storytelling and narrative is highlighted. Key weaknesses include frustrations with technical difficulties and lack of sufficient or appropriately contextual content, all of which might negatively impact the overall experience. A full account of the products reviewed is in chapter two and Appendix 2.A.

This study aims to build on what was learned from these various products by proposing a definition of the visitor engagement experience, with recommendations on appropriate design features to optimise visitor engagement.

1.3 Main aims and objectives of the research

The aims, objectives and research questions for this study are described below.

1.3.1 Aim

The aim of this study is to develop design guidance that can be used by cultural heritage practitioners and digital designers to inform their creation of digital products intended to provide interpretation which will deepen the engagement of visitors with outdoor, non-visible and un-stewarded cultural heritage.

1.3.2 Objectives

To achieve this aim the following research objectives (RO) were developed. Note that all research objectives are in the context of cultural heritage which is outdoor, non-visible and un-stewarded.

- RO 1: to explore the relationship between heritage locations and visitors;
- RO 2: to understand the contribution that interpretive digital media can make to visitor engagement;

- RO 3:to develop a framework for visitor engagement which defines processes and behaviours associated with effective engagement and describes product features and functions required to achieve this;
- RO 4:to develop guidance (which includes the framework described in research objective 3) to support the production of interpretive digital media capable of deepening visitor engagement;
- RO 5: to assess the effectiveness of the framework and the guidance by using both to develop a prototype digital product which will then be evaluated to assess its impact on visitor engagement.

Research objective 1 is covered in chapter 2 the Professional Practice and Literature Review and research objective 2 is explored in chapter 4 Preliminary Studies. Research objectives 3 and 4 are covered in chapter 5 the Development of the Design Guide and research objective 5 is covered in chapter 6 Design of the Victoria Park Prototype Product and chapter 7 Results of the Victoria Park Study.

1.3.3 Research Questions

To achieve the aim and objectives the following research questions (RQ) were proposed at various stages of the project. The Literature and Professional Practice Review explores research questions 1 to 4.

- RQ 1: How do visitors relate to cultural heritage, particularly that which is outdoor, non-visible and un-stewarded?
- RQ 2: What factors are necessary for delivering effective interpretation of heritage which is outdoor, non-visible and un-stewarded?
- RQ 3: What factors are necessary for creating effective visitor engagement with outdoor, non-visible and un-stewarded heritage?
- RQ 4: How does a mobile digital solution contribute to the visitor engagement with outdoor, non-visible and un-stewarded heritage?

Research questions 5 to 7 are explored in the Preliminary Studies.

- RQ 5: What are the experiences of cultural heritage practitioners and digital design partners in creating and implementing interpretive digital media products?
- RQ 6: How effective is mobile digital media in supporting visitor engagement with outdoor, non-visible and un-stewarded heritage?
- RQ 7: What does the visitor consider to be a successful engagement experience in the context of visiting outdoor, non-visible and un-stewarded heritage?
- RQ 8: Which features and functions of an interpretive digital media product are most successful in supporting visitor engagement in the context of visiting outdoor, non-visible and un-stewarded heritage?

Research Questions 9 to 11 were addressed as part of the Victoria Park study.

- RQ 9: Is the Victoria Park prototype product effective in supporting a high level of visitor engagement?
- RQ 10: Do the framework and the guidance proposed by this study contribute effectively to the production of a prototype product capable of engaging the visitor with the heritage?
- RQ 11: To what extent does being on location with the interpretive digital media add value to the engagement experience?

1.4 Structure of the thesis

This thesis is divided into eight chapters: introduction; professional practice review and literature review; methodology; results of preliminary studies; development of the guidance and the engagement framework *;* design and development of the prototype product; results of the evaluation of the prototype product incorporating evaluation of the guide and the framework; conclusions and recommendations. A summary of each chapter is given below:

Chapter one (Introduction) identifies the aims and objectives of the research and provides a contextual overview of the study with a summary of the background and motivation.

Chapter two (Literature and professional practice review) examines the relationship between the visitor, the cultural heritage location and digital media exploring issues pertaining to each of these three factors identifying good practice and highlighting gaps in knowledge.

Chapter three (Methodology) provides an overview and rationale for the research processes used throughout this study.

Chapter four (Results of preliminary studies) presents the results of initial primary studies undertaken to ascertain the experiences of cultural heritage practitioners and visitors in developing and using interpretive digital media products.

Chapter five (Development of the guidance and the engagement framework) describes the development of both guidance and explains the inclusion of the final processes and features.

Chapter six (Design and development of the prototype product) describes how each of the project stages for the development and implementation of the Victoria Park prototype product was undertaken using the guidance and the engagement framework.

Chapter seven (Results of the evaluation of the prototype product and the guidance) presents the results of the visitor field studies with analysis of the findings and conclusions on the effectiveness of the prototype to optimise visitor engagement with cultural heritage.

Chapter eight (Conclusions and recommendations) identifies the contribution to knowledge made by this study, commentary on the limitations of the research and recommendations for future work in relation to engagement and interpretive digital media.

2 Chapter Two: Literature and Professional Practice Review

2.1 Introduction

Chapter two describes the first stage of the study presenting a review of academic and professional practice resources including books, journals, academic papers, conference proceedings, professional practice guidelines, websites, practitioner blogs, newspaper articles, press reports, professional publications relating to museum visitors, cultural heritage, historical interpretation, human computer interaction, user centred design, place centred design, edutainment, learning styles, project management and engagement. This review was conducted both at the beginning of the research process and on an ongoing basis until the creation of the guidance.

The purpose of the review is to meet the first objective of the study as outlined in section 1.3.2 page 1-12. This will inform what is currently known regarding effective visitor engagement and interpretive digital media products and will identify gaps in knowledge. To achieve this aim the first four research questions of the study are explored, see section 1.3.3 page 1-13.

2.2 Visitors and heritage

A clear understanding of the visitor, their motivations, their needs, their expectations, their behaviours and their personal preferences underpins this study and is essential for informing the visitor engagement experience outlined in chapter one, figure 1-1 page 1-1. To further explore these issues a range of resources, including academic publications and practitioner reports from the cultural heritage sector, have been reviewed to establish a picture of the cultural heritage visitor. Presented here is a review of findings in the main areas identified. A summary of the findings is presented at the end of the section with discussion as to gaps in the research and the relevance to this study.

2.2.1 The visitor

The importance of engaging the visitor and the vital role of the visitor to the museum sector and to cultural heritage is well documented in the literature on visitor and

museum studies. It is argued that 21st century museums need to engage and involve their users both on-site/in-gallery and on-line/virtually if they are to continue to have public and cultural relevance (Black, 2012). The traditional role of the museum as the inward looking, curator driven, collection focussed custodian of heritage and protector of artifacts has been challenged and is now largely replaced with outward facing, people centred, audience focussed organisations and agendas. Stephen Wiel (1999), writing on the transformation of the American museum describes this shift from *being about something* to *being for someone* highlighting the consequence for museums as they address the subsequent impact this has on the design, creation and delivery of the museum experience.

To help track this shift towards the audience centric museum it is useful to start with the three types of visitor identified by Doering in 1999: *strangers*; *guests* and *clients*. These three categories sit on a continuum line with *strangers* on one side and *clients* on the other, although Doering contests that this is not a sequential development from *stranger* to *client*. The reality is more complex with the museum, not the public, retaining primary responsibility for the collection. In *guest* mode the museum accepts responsibility for the public and takes on a philanthropic role of 'doing good' which often manifests as a responsibility to educate. When a museum sees the visitor as a *client* it undertakes a responsibility to be accountable to the visitor. In this mode the needs and expectations of the visitor are taken into account and it is the need of the visitor rather than the ambition of the curator which is at the heart of the visit experience. In this mode the museum seeks to understand and satisfy the *client*. Doering and colleagues explore this further developing an empirical list of satisfying experiences, figure 2-1 page 2-19, which the visitor might seek in a museum (Pekarik, et al., 1999). A satisfying experience is one which represents a combination of the availability of the experience, the quality and the intensity of that experience and the preference of the individual. The satisfaction of the museum experience, as defined by the visitor, is central to discussion on the role and effectiveness of museums. Creating, designing and delivering museum experiences which meet visitor needs, the adoption of a strong visitor focus, coupled with audience-centric approaches to design and evaluation are essential (Di Pietro et al.,

2014). Museums should be aiming to work in partnership with visitors (Black, 2012) and strengthening relationship with visitors by understanding how museum experiences achieve this (Everett and Barratt, 2009).

Satisfying experiences are classified into four categories:

- **Object experiences**: focus on something external to the visitor and include seeing the 'real thing', or being moved by beauty
- **Cognitive experiences**: focus on the intellectual experience of learning something new, gaining information or developing a deeper understanding of something
- **Introspective experiences**: focus on things which are private and internal to the visitor such as remembering, reflecting, imagining and connecting in a personal way
- **Social experiences**: focus on the interactions with other people, family, friends, other visitors and staff

Figure 2-1 Satisfying museum experiences (Pekarik at al 1999)

2.2.2 Visitor trends

To assess the levels of engagement with cultural heritage in the United Kingdom a variety of statistical resources were reviewed including CASE (Culture and Sport Evidence), the *Taking Part Survey* 2015-2016 and *Heritage Counts* 2017. Details of each of these resources is now provided.

The CASE programme was a jointly funded programme of strategic research led by the Department of Culture Media and Sport in association with Arts Council England, English Heritage and Museums, Libraries and Archives Council and Sport England. The aim of this project was to provide culture and sport agencies, local authorities and other public bodies with statistical data about CASE data. Significantly for this study information regarding cultural engagement was collected and reported on (CASE, 2010). A summary of findings indicated the following general trends in relation to audience participation and engagement with culture:

- increasing age predicts an increase in involvement with cultural heritage;
- self-reported childhood experiences of engaging with all kinds of culture has a positive association with engaging with culture as an adult;
- those with high levels of education are more likely to engage in with cultural activities than those with lower levels of education;
- those of a higher socio-economic group are more likely to visit a museum or a heritage site than those of a lower socio economic state;
- women are more likely to visit a museum than men and families are more likely than non-families to visit heritage and museums.

Although over seven years old now this data serves as a helpful benchmark and provides an important to link projects such as the ongoing Taking Part Survey.

The *Taking Part* survey is a continuous annual house hold survey of adults and children. Conducted in England this face to face survey has run since 2005 and is the main source of evidence for the Department of Culture Media and Sport and its sectors. Among the main objectives the survey aims to provide a central reliable source that can be used to analyse cultural engagement including why people do not engage. Findings from this research underpin further research on driving engagement as well as the value and benefits of engagement. The survey is commissioned by the Department of Culture Media and Sport and three partner organisations: Arts Council England, Historic England and Sport England. The most recent published findings, for the year 2015/2016 show a slight increase from the previous year in the number of visits to heritage sites, from 72.6% in 2014/2015 to 73.2%. A breakdown of the most recent figures indicate that locations such as a 'city or town with historic character' experienced the highest frequency of visitor in 2015/16, see figure 2-2 page 2-21.

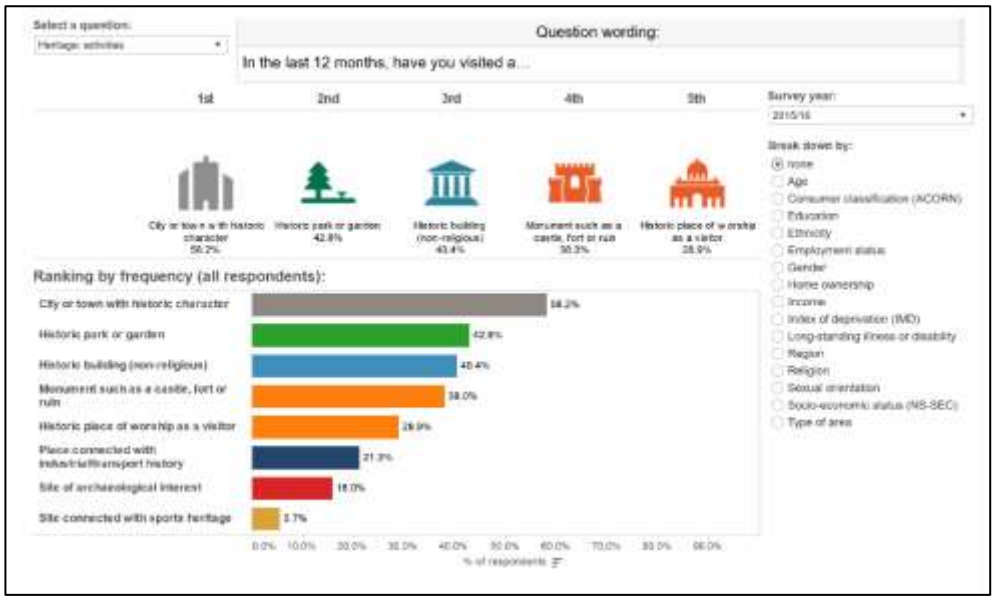


Figure 2-2 Heritage sites visited (Taking Part Survey, 2017)

An overview of visiting patterns indicates that the most frequent group is 'husband/wife/partner', then 'friends', then with 'your children' figure 2-3 page 2-21.

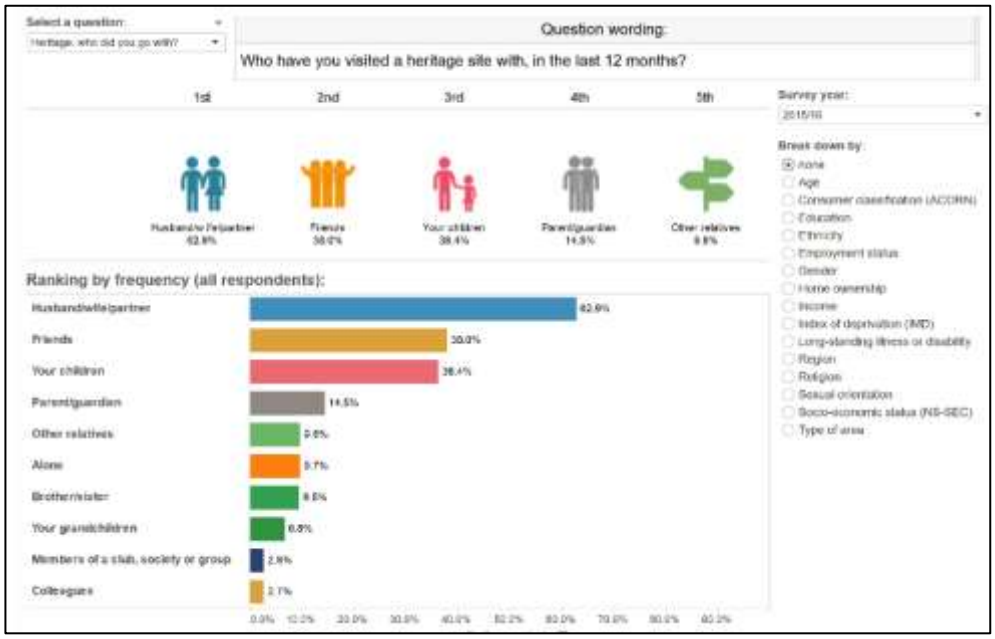


Figure 2-3 Who you went with (Taking Part Survey, 2017)

Regional visiting patterns for heritage sites indicate that the South, the East Midland and the East of England experienced participation levels above than the national average, figure 2-4 page 2-22.

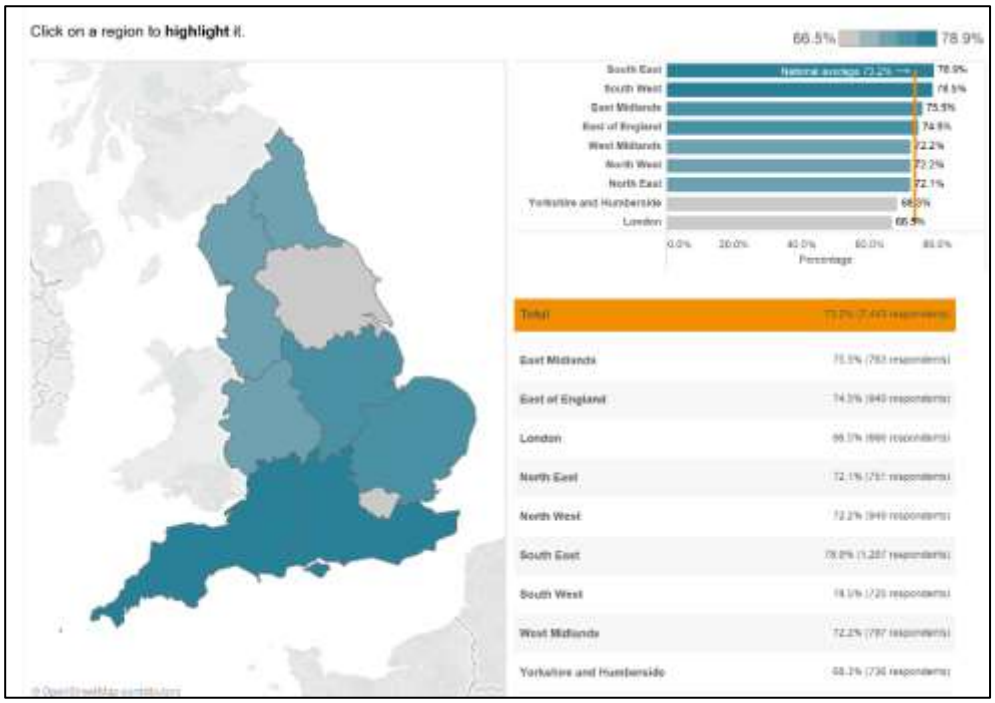


Figure 2-4 Visits to heritage sites by region (Taking Part Survey, 2017)

The availability of personal free time is the most significant reason for more or less participation; a reason which is consistently reported since the survey was first conducted in 2005/2006 as well as for the most recent period, figure 2-5 page 2-22.

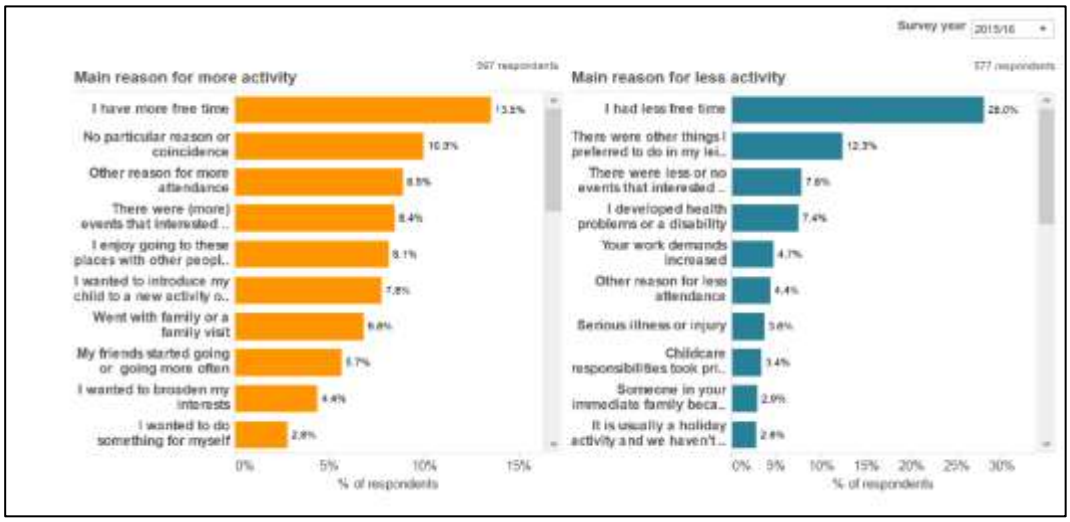


Figure 2-5 Changes in visits numbers (Taking Part Survey, 2017)

Heritage Counts is a report produced each year by Historic England to provide indicators about the state of the historic environment. Included in the report is an account of public engagement with heritage. Reporting on the *Taking Part Survey* results from 2016/2017

this report concludes that participation in heritage is becoming more inclusive with 74.2% of adults in England visiting a heritage site at least once during 2016/2017, up 70% from 2005-2006. Adults are visiting heritage sites more frequently with the proportion who visited a heritage site at least once a month increasing from 15.3% in 2005/2006 to 18.3% in 2016/2017 and the number of adults visiting heritage sites at least 3-4 times a year rising from 41.8% to 46.9% over the same period. More young people are participating in heritage from 61.6% of 16-24 year olds in 2005/2006 to 72.4% in 2016/2017 although participation is highest amongst the 65-74 year olds at 77.5%. Participation figures for 2016/2017 show a statistically significant increase for all adults, lower socio economic groups, black and ethnic minority groups and those with a limited disability or illness since the baseline of 2005/2006.

The VisitEngland survey (BDRC, 2016) reports that there were 71.5 million visits to 'historic properties' in 2016, an increase of up to 44% since the survey began in 1989, figure 2-6, page 2-23. According to this survey the most popular types of history attractions were historic houses, representing 40% of all heritage visits and historic gardens, representing 15% of all heritage visits. 52% of visitors were on local day trips, 25% were other UK visitors and 23% were from overseas. Visitor figures for properties and sites managed by national heritage groups also grown considerably over the past 10 years as shown in figure 2-7 page 2-24.

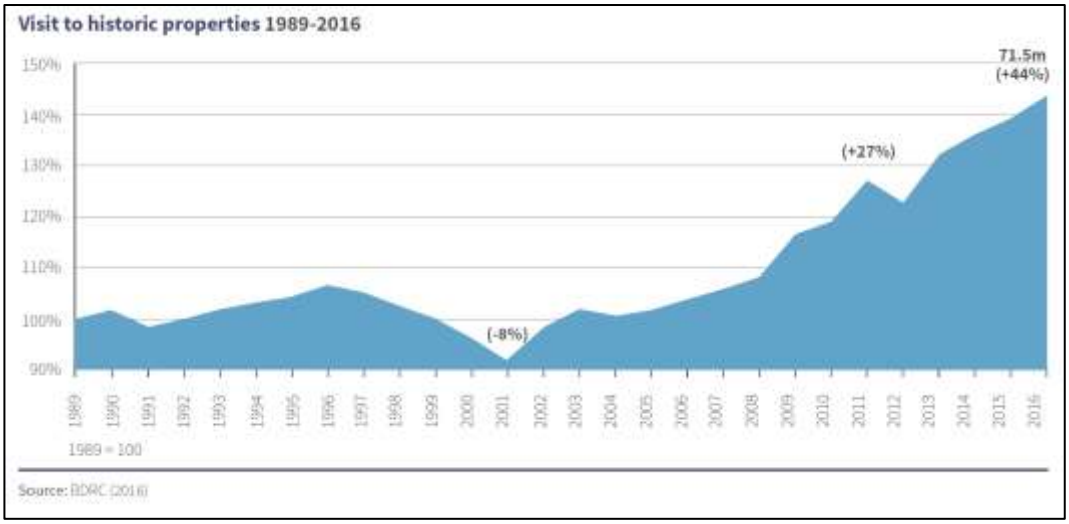


Figure 2-6 Visits to historic properties 1989-2016 (BDRC 2016)

Figure 2-7 Visits to heritage properties 2016/2017 (BDRC, 2016)

2.2.3 Museums and visitors

Putting visitors at the heart of the museum has become a key strand of strategic development for museums and cultural heritage organisations (Murphy, 2016). Stringent cuts in the sector combined with strong competition for people's leisure time from alternative visitor attractions and activities has promoted the importance of customer relationships to the forefront of museum thinking. Museums are increasingly spending time focussing on what makes a good visit for different visitors and how they can meet the needs and tastes of diverse audiences. Information on museum strategy regarding audience development is widely available in reports produced by the sector and it is clear that using segmentation methods and tools to better understand the audience has become common place amongst the larger organisations. This section of the review clarifies the role of segmentation in the heritage sector and examines three case studies where segmentation has been used by museums and heritage groups to better understand and reach their audience.

Segmentation is a long established market research method for dividing up markets into humongous 'segments' of customers. The members of a segment are assumed to respond to products and services in the same way thereby assisting the organisation in planning, developing and delivering its customer offer. For the heritage sector segmentation involves breaking down audiences in to groups that have similar characteristics, needs and behaviours.

Segmentation uses different variables to identify segments. Typically this includes the following categories (examples of component factors provided):

- **socio-demographic**: age, class, gender, occupation and educational attainment;
- **geo-demographic**: location of the members;
- **behavioural**: willing, resistant, frequency of visit, spending patterns;
- **psycho-graphic**: beliefs, values, world views, opinions, interests.

Traditional understanding of heritage audiences using these classic market segmentations suggest that the more educated a person the more likely they are to go to a museum, and those with a higher house hold incomes are more likely to visit museums and galleries (Black, 2012). Evidence from the various surveys reported in 2.2.2 provide more recent evidence on audience attendance to support this.

Most segmentation systems used in the commercial sector and public engagement are provided by commercial companies and are widely available. Amongst the most widely used systems are the Tapestry segmentation system, provided by Esri for the American market, and the MOSAIC consumer classification system provided by Experian. The MOSAIC 2009 classification, as summarised and used by the Audience Agency (The Audience Agency, 2013) consisted of 15 summary groups and 63 detailed types. MOSAIC codes for 2018 are a little different although there are still 15 groups but with 66 detailed types (Experian, 2018). Full details of the codes are in Appendix 3A.

More recently segmentation tools have been addressing the psycho-graphic variables with a focus on beliefs and values. A significant example of this is *Culture Segments*, a sector specific tool created by marketing company Morris Hargreaves and McIntyre designed to provide the sector with a shared language for understanding audiences. Used by a large number of museums and heritage institutions *Culture Segments* represents an evolution in segmentation in the culture sector, from the traditional demographics of target groups, and commercial activities such as box office behaviours, towards a focus on values and beliefs. Divided into eight parts *Cultural Segments* defines specific areas within the market for arts, culture and heritage based on people's cultural

values and motivations. A summary of these segments is provided in figure 2-8 page 2-26.

***Enrichment**: mature, traditional, heritage, nostalgia*
Characterised by older adults who like spending their leisure time close to home. They have time to spare, established tastes and enjoy culture that links with their interests such as nature, heritage and traditional art forms. Consumption of culture is moderately high with a focus on art and heritage such as historic properties, parks and gardens.

***Entertainment**: consumers, popularist, leisure, mainstream*
Characterised by conventional younger adults, occasional consumers of culture. Generally a sporadic relationship with the arts attending popular block-buster events which are exciting or spectacular.

***Expression**: receptive, confident, community, expressive*
In tune with their creative and spiritual side this group is confident, fun-loving, self-aware with a wide range of interests including learning, culture, community and nature. They like active rather than passive experiences and seek inspiration and opportunities for self-expression through their engagement.

***Perspective**: settled, self-sufficient, focused contented*
Settled fulfilled and home orientated, arts and culture are low in priority for this group. Making their own discoveries and a desire to learn are strong motivators and this group may be more drawn to engage with libraries and history as a way to broaden their horizons.

***Stimulation**: active, experimental, discovery, contemporary*
An active group who look for new experiences and challenges and like to break away from the crowd. Open to a wide range of events but prefer live music and festivals.

***Affirmative**: self-identify, aspiration, quality time, improvement*
Typically young adults often studying or looking after a family at home. Cultural consumption is a way of enjoying quality time with friends and family, developing their children's knowledge and improving themselves.

***Release**: busy, ambitious, prioritising, wistful*
Younger adults with busy working and family lives who used to enjoy popular culture and the arts but have limited time and their priorities have changed. Preoccupied with meeting life's demand this group seeks opportunity for relaxing, being entertained and socialising in their leisure time. Consumption of the arts is relatively low, though they express a certain wistfulness that they are missing out on something they once enjoyed.

***Essence**: discerning, spontaneous, independent, sophisticated*
Well educated professionals who are highly active cultural consumers and creators. Confident in their own tastes they live full and active lives with a high level of cultural consumption across the arts sector.

Figure 2-8 Culture segments (Morris et al. n.d.)

Research commissioned by the National Co-ordinating Centre for Public Engagement (NCCPE) and the Economic Social Research Council (ESRC) to examine audience segmentation methods and tools in relation to pubic engagement highlighted the ways in which these techniques were being used as part of broader strategic rationales to promote behaviour change and visitor engagement. The report concluded that segmentation was being used to generate movement: to change people's attitudes; to

increase public support; to alter behaviour; and overcome barriers and impediments to public engagement (Barnett and Mahony, 2011).

Further evidence that segmentation methods are used extensively in the heritage sector to improve engagement with their audience can be found in sector specific reports and case studies. Two examples of segmentation, the British Museum and the National Trust are provided demonstrating the use of segmentation across the sector.

Using the *Cultural Segments* tool the British Museum successfully ran a marketing campaign to attract a new audience for contemporary art to the Museum. Focussing on just three segments: Essence; Expression; and Stimulation the Museum ran a differentiated campaign targeted at these three groups. The ticket sales target of 60,000 was exceeded after three months. Advanced tickets sold out and the run of the exhibition was extended by a week to meet the additional level of demand. The exhibition was able to attract a larger, paying audience than was originally anticipated (Morris Hargreaves McIntyre, 2012).

The National Trust has a segmentation tool which defines seven audience categories although their main focus is on three, figure 2-9 page 2-27. This tool is clearly used strategically by the National Trust and can be found across their operations from brand standards to volunteer training. (National Trust, n.d). A summary of the additional categories is in figure 2-10 page 2-28.

Curious Minds: Active thinkers who are always questioning and making connections between things they learn. Regular visitors to the National Trust, likely to visit all year round they expect good service and like a place to sit and think. The identified challenge for the National Trust is to maintain and deepen the interested of those in this category.

Out and About: Spontaneous and social people who prefer chance encounters than firm plans and love to share experiences with their friends. More likely to visit when the weather is good and unlikely to stay if the get bored. They like to amble and do whatever takes their fancy. The identified challenge of the National Trust is to engage this group beyond a brief visit or to make them prioritise Trust venues when looking for a day out.

Explorer Families: Families that actively learn and play together. Most likely to visit at weekends and during the school holidays. Visits are focussed on family time, authentic adventure and happy 'accidental' learning. The identified challenge for the National Trust is to stimulate both parents and children providing choice and options.

Figure 2-9 Segmentation descriptors (National Trust, n.d.)

Young Experience Seekers: People who are open to challenge, in a physical or horizon-broadening sense They make and take opportunities in their journey of personal discovery.

Live Life to the Full: Self-driven intellectuals, confident of their own preferences and opinions and highly independent in their planning and decision making; these people are always on the go.

Kids First Families: Families who put the needs of the children first and look for a fun environment where children are stimulated and adults can relax; they're looking for a guaranteed good time.

Home and Family: Broad groups of friends and family who gather together for special occasions. They seek passive enjoyment of an experience to suit all tastes and ages.

Figure 2-10 Segmentation additional descriptors (National Trust, n.d.)

Segmentation activities can be used to explain when and why people engage with heritage and provide information as to what museums and heritage groups are doing to make themselves more accessible and build audiences; but this does not necessarily explain how museums are designing exhibitions to deepen the experience of being engaged. Understanding this relationship is explored later in section 2.3 where the literature on the ways in which museums and heritage sites interpret and present their collections is reviewed.

2.2.4 Visitor motivations

The motivations and expectations of visitors have been identified and discussed substantially within the literature on museum and visitor studies. Opportunities to learn, the challenge of the experience and doing something new (Hood, 1993) are common threads found in many studies. Kelly's research in Australia between 1999 and 2001, as reported by Black (2012) added entertainment and the interests of the children/family to the list. McManus' (1991) research at the Science Museum in London identified the main motivations to visit as (in descending order of frequency of response): '*family visit with the children'*; '*recreation'*; '*reputation of the museum*'; '*interest in science'*; '*revisiting the venue/exhibit*'; and '*museuming'*. Associated with these are expectations of '*finding out/learning'*, '*having fun'*, '*general interest'*, '*specific aspect of the museum'* and '*no structured plans'*. McManus deduced from this that people are interested but not necessarily focused; they are keen to socialise but not academically studious.

Previously documented in 2.2.3 are the motivations as outlined by the National Trust which also emphasises '*learning*', '*having an experience*' and '*being with the family*'.

Falk's *Identity-Related visitor motivation model* (2006) identifies five categories of visitor motivations. Falk argues that these motivational needs are engendered by underlying identities and that these identities are both ephemeral and situated, in other words you can be one thing today and another tomorrow. The original categories in the model are show in figure 2-11 page 2-29.

Falk's Identity-Related visitor motivation model

- **Explorers** - curiosity driven, they expect to find something that will contribute to their learning.
- **Facilitators** - social motivated individuals who enable the experience and the learning of others.
- **Professional/hobbyist** - people who feel a close tie between the content and their profession or hobby. The visit is usually motivated by a desire to satisfy a specific content related objective.
- **Experience seekers** - those who see the museum as an important destination that has to be experienced.
- **Re-chargers** - people seeking a contemplative, spiritual, restorative experience. For these people the museum is a refuge from their day to day work.

Figure 2-11 Identity-Related visitor motivation model (Falk, 2006)

In 2013 Bond and Falk added the **Respectful pilgrim**, those with a sense of duty to honour to the memory of those represented and **Affinity seekers** – the museum speaks to the visitor's sense of heritage (Bond and Falk, 2013).

Work by Morris Hargreaves and McIntyre classified the principle motivations of visitors into four key drivers providing a slightly different slant: Social; Intellectual; Emotional; and Spiritual, figure 2-12 page 2-30. These drivers were considered to be hierarchical with visitors experiencing increasing levels of engagement as they progress up from social to spiritual (Renaissance North East, 2007).

Figure 2-12 Hierarchy of Motivations (Morris Hargreaves and McIntyre, n.d.)

Raajpoot and colleagues describe ten dimensions of museum experience identifying seven areas, figure 2-13 page 2-30, relating to the quality of the visit experience, confirming the importance of these features in the motivation of the visitor.

- **Pleasure** - the joy one feels when viewing a beautiful object.
- **Relaxation** - getting away from the usual demands of life.
- **Learning** - including the challenge or satisfaction of discovering things.
- **Entertainment** - the enjoyment of the social outing.
- **Solitude** - getting away from others and internalising or meditating.
- **Self-actualisation** - a way for people to find solace and a secure representation of their self.
- **Aesthetics** - the appreciation of beauty and good taste

Figure 2-13 Dimensions of the Museum Experience (Raajpoot et al. 2010)

Similar qualities are identified by Bakhshi and Thorsby (2010) whose work identified three things a visitor might expect to do as part of their visit: '*improve their knowledge'*; '*have an immersive experience';* and '*escape from the every day'*.

2.2.5 Visitor behaviours

So far this review has considered the literature relating to audience attendance, sector segmentation and the motivations of visitors which provides an underpinning context as to who engages with heritage and why. This section considers what is known about

visitor behaviour during their visit with a focus on how they move around the location, their attention on and interaction with the exhibits and their interaction with others.

Visitor movement: The concept of a visitor 'style' is presented in the literature as typified by four dominent types of visitor movement (Zancanaro et al., 2007; Sookhanaphibarn and Thawonmas, 2009; Antoniou and Lepouras, 2010 and Lanir et al., 2017). Using ethnographic observations of visitor behaviour Vernon and Levasseur (1983) compared visitor movements to the behaviour four typical animals: *ant*, *fish*, *butterfly* and *grasshopper*, figure 2-14 page 2-31.

Vernon and Levasseur – Visitor Behaviour

- The **ant** visitor moves in a linear fashion, tends to follow a specific path and avoids empty spaces. They will look at almost all of the exhibits and is interested in details.
- A **fish** visitor moves around in the centre of the room, trying to see the bigger picture. They don't approach exhibits and usually avoid looking at details. They do not stop frequently.
- The **butterfly** visitor moves in a non-linear pattern avoiding paths or curator suggestions and is guided by the physical orientation of the exhibits. They change direction and stop frequently to look for more information.
- The **grasshopper** visitor has a specific preference for some pre-selected exhibits. They spend a significant amount of time looking at these and ignoring the others. *Grasshoppers* will cross an empty space to see the exhibit that interests them.

Figure 2-14 Visitor behaviour (Vernon and Levasseur, 1983)

A visitor can change their behaviour over a long visit and the style might also be affected by the visitor's interests. Zancanaro (2007) validated this research by applying and unsupervised learning approach to these visitor classifications, using automatically generated logs of visitor positioning and providing quantitative empirical evidence to support the theory. Bitgood (2006) argues that visitor circulation is influenced by the general value principle: a ratio between the benefits gained and the cost expended. Visitors attend to things which they perceive to be beneficial (satisfying, curiosity, enjoyment) only if the costs (time, effort and so on) are low. Visit design should minimise visitor effort with clear narratives and uncomplicated navigation routes.

Visitor interaction with exhibits: The ways in which visitors engage with exhibits is well documented within the literature on museum studies. Two measures which are frequently used to assess this relationship are: *attraction power* and *holding power* (Serrell, 1997; Bollo et al., 2005; Lanir et al., 2013). *Attraction power* indicates the relative amount of people who have stopped in front of an exhibit during their visit and is calculated by dividing the number of people who stop by the number of people who have visited to exhibition overall. *Holding power* measures the average time spent in front of an exhibit. Screven (1999) argues that stopping and viewing tells us little about visitor involvement and does not indicate the quality of involvement, whether the visitor is active or passive, focussed or unfocussed. Further discussion on the ways in which museums design for engaging the visitor with the artefact is provided in section 2.3. Bitgood (2013) proposes an attention-value model which draws on his earlier discussion on the general value principle and presents visitor attention as a three-stage continuum involving *capture*, *focus* and *engagement* in which learning is the outcome (or benefit) of paying attention (the cost). Further discussion on the literature relating to visitor attention and how this relates to engagement is provided in section 2.4, page 2-45.

Visitor interaction with other people: People typically visit heritage sites and museums with others and there are a range of studies which explain how visitor interaction with other people impact on the overall visit experience.

> "The presence and conduct of others have a profound impact on what we see and do and on the opportunities that arise for exploration, investigation and learning" (Heath and vom Lehn 2010, p277).

Social interaction has a significant influence on how people choose to look at exhibits, how they explore and examine objects and in the interpretations and conclusions which are made by the visitor. Social interaction can enhance the experience and improve engagement for example by facilitating interpretive discussion and supporting the role of the family as a learning system, however it can also prove to be distracting and ultimately lead to disengagement, a premature end and a unfulfilled experience. (Falk and Dierking, 1992; Heath and com Lehn, 2010; Sanford 2010; Tolmie et al., 2014; Dim and Kuflik, 2014; Fosh et al., 2016).

The role of conversation is central to groups as it guides informal activities and helps individuals to filter concepts and ideas through a shared perspective (Falk and Dierking, 1992). Leinhardt and Knutson (2004) categorise different types of conversation into a hierarchy of talk. *Descriptive* talk is an initial way to understand what people are seeing. This talk is limited and does not support significant learning or represent deep engagement. *Analysis* occurs when visitors are trying to work out how the features of the environment work. *Synthesis* is using features outside the immediate environment and merging them with features of the current environment and *explanation* is using causal examples or personal experience to understand the current environment. *Analysis*, *synthesis* and *explanation* are considered to be higher forms of interpretation and subsequently most consistent with indicators of learning. Effective museum experiences which achieve deeper engagement will go beyond *descriptive* talk and facilitate and accommodate interpretive talk – *analysis, synthesis* and *explanation* (Sanford, 2010).

Kuflik and Dim - Visitor Behaviour Types

- **Penguins** – a pair of visitors who walk through exhibits but pay no attention to the exhibits. Their time is short and they move on to other parts of the museum.
- **Geese**: a pair of visitors who advance together but one seems to take the lead and signal to the other when it is time to move on.
- **Meerkats**: a pair of visitors who operate in a synchronised manner, moving from one exhibit to the next together, paying a lot of attention to the exhibit and standing side by side.
- **Parrots**: a pair of visitors who move from one exhibit to another together, half facing the exhibit and half facing the other person. They interact whilst they look at the exhibits.
- **Doves**: a pair of visitors who stand face to face involved in conversation and ignoring the exhibits.
- **Lone Wolves**: a pair who enter the museum together and then split, either walking apart or by standing with their backs to one another.

Figure 2-15 Visitor Behaviour Types (Kuflik and Dim, 2013)

Kuflik and Dim (2013) observed the level of social synchronicity between pairs of visitors and whether or not the pair paid attention to museum exhibits. Six behaviour types were selected and categorised as shown in figure 2-15 page 2-33.

They propose that sensitivity to the social context of people visiting museums as a pair may be able to generate social interaction opportunities to strengthen the social behaviour and enhance visit experience. Improving the social intimacy of the small group would visitors to engage in behaviours which would in turn improve their visit experience (McManus, 1991).

In larger social group settings behaviours of *summoning, pressurizing, herding, sidelining* and *rounding up* have been identified (Tolmie et al., 2014). Outlined in figure 2-16 page 2-34, these behaviours were considered to lead to responses of *following*, *skimming* and *digging in, directing the family, preferential rights* (typically for young children) and *keeping up*.

Tomie et al – Visitor Behaviour

- **Summoning**: calling someone away from what they are doing by gesturing, calling etc. This might be in the form of parents expressing demanding that children 'come along' or a child calling a parent to come and look at something. *Summoning* is direct and difficult to ignore.
- **Pressurizing**: similar but a more overt form of summoning typically observed in family groups and school parties as sibling and or peer pressure and is more visible among younger visitors.
- **Herding**: a tacit form of summoning which usually involves visible waiting, looking at those that are remaining and then re-joining once they move on, all ensuring that the ongoing consumption of information is discontinued.
- **Sidelining**: related to both pressurising and herding this happens when a member of the group is unable to engage fully in looking at an object through obligation of maintaining the coherence of the group, for example, the mother who has already abandoned one exhibit to catch up with her family is then physically blocked form seeing the next item because she arrives after the rest of her family and her view is obstructed. Once they move on the pressure to remain with the group means that she is unable to stay and see the item for herself.
- **Rounding up**: action undertaken by members of the group when they feel that there is a breach in the overall cohesion of the group.

Figure 2-16 Visitor behaviour (Tolmie et al., 2014)

Supporting group cohesion whilst maintaining the engagement of individuals continues to challenge museums and heritage groups. Valid for this study are the findings of Lanir et al (2013) who observed that whilst the use of mobile guides in museums encouraged visitors to stay longer and spend more time looking at the exhibits features in the guide

the negative impact was that proximity and interaction with fellow group members was significantly reduced. This phenomena of isolation created by the use of personal interpretation media will be further explored in section 2.6.

2.2.6 Visitor Preferences

Visitor have individual differences and preferences with regard to how they like to receive and process information and how they like to control the experience they are having (Kolb, 1974 and 1984; Honey and Mumford, 1992; Riding and Cheema, 1991; Riding and Raynor, 1998). These personal preferences are well documented in the literature on museum studies and adult learning and a brief overview of the key thinking in this area is now presented. Note that learning styles and cognitive styles are not the same and that a cognitive style is related to a person's preferred, intrinsic and habitual approach where as a learning style is more akin to an applied strategy. Note also that the concept of learning styles is not without critique and there are those within management, cognitive psychology and education who doubt their validity (Buckley and Caple, 1992; Caple and Martin, 1994; Reynolds, 1997). Their usage however continues to underpin much of the design of adult learning experiences and remains therefore worthy of inclusion in this review.

Kolb (1974, 1984) argues that the learning process can be reduced to two dimensions incorporating four learning modes: *concrete experience* (CE), *reflective observation* (RO), *abstract conceptualisation*, AC) and *active experimentation* (AE). An individual's choice of experience will influence which modes of learning are emphasized and which learning strategy they develop. A full and effective learning experience will require the learner to operate in each of the learning modes at some point. Kolb's learning styles relate to pair combinations of the basic learning modes, figure 2-17 page 2-36.

> **Convergent style**: abstract conceptualisation/active experimentation – shows the strength in the application of practical ideas and problem solving.
>
> **Divergent style**: concrete experience/reflective observations – being imaginative and seeing things from many perspectives.

Assimilation style: abstract conceptualisation/reflective observation – inductive reasoning and the ability to encompass disparate observations into an integrated framework.

Accommodative style: concrete experiences/active experimentation – getting things done and involvement in new experiences; intuition, trial and error are the basis of problem solving.

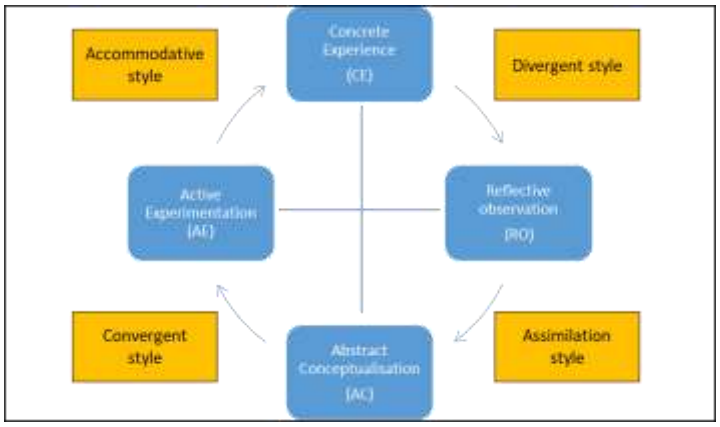


Figure 2-17 Kolb Learning Modes and Learning Styles (Kolb, 1974 and 1984)

Working in the context of managerial learning styles Honey and Mumford (1982) identified four learning styles with learner preferences as to the experiences they would find most useful, figure 2-18 page 2-36.

Honey and Mumford – Learning Styles

- **Activists**: Tend to thrive on the challenge of new experiences and like to learn by doing. They learn best from new and novel experiences and like to get involved.
- **Reflectors**: Like to stand back and consider experiences from a distance. They learn best from experiences where they can watch and think and prefer to stand back and observe the group.
- **Theorists**: Rely on rationality and logic. They like models, principles and theories and tend to be detached and analytical. They learn best from being intellectually stretched and like to participate in complex situations.
- **Pragmatists**: Seek out new ideas and put them into action. They like to see things in practice and regard problems as opportunities. They learn best when they can see links between what they are learning and what they are doing.

Figure 2-18 Learning Styles (Honey and Mumford, 1982)

As well as learning styles individual learner differences also includes levels of cognitive control. *Field dependence/independence* refers to "the degree to which the learner's perception or comprehension of information is affected by the surrounding perceptual or contextual field" (Jonassen and Grabowski, 1993, p87). *Field-dependent learners* like group-oriented and collaborative learning with clear structure and organisation of material. They attend to the social components of the environment and respond well to external reinforces and they prefer external guidance. *Field-independent learners* like problem solving and prefer situations where they have to work things out. They will transfer knowledge to new situations and they prefer to be independent. They respond well to inquiry and discover learning. The implications of this for creating interpretive media is to ensure that sufficient attention is paid to the levels of control a visitor might wish to have over their experience and there is a clear tension between this and the amount of guidance and freedom which should be provided by any interpretive solution.

> "Cognitive Style is an individual's preferred and habitual approach to organising and representing information" (Riding and Raynor 1998, p8).

Riding's theory on cognitive style argues that various style labels can be accommodated within two fundamental style dimensions: *wholistic – analytical* (how the individual tends to organise and structure information) and *verbal – imagery* (how the individual tends to represent information during thinking). A *wholist* will see the whole, big picture with an overall context whereas *analytics* will see the situation as a collection of parts and will often focus on one or two aspects of a situation. *Verbalisers* like text and words whereas *imagers* like pictures and can visualise things. Different types of content and different ways of delivering content will need to be provided by designers of interpretive media if all cognitive styles are to be addressed.

Based around his experiences as a schools inspector in New Zealand Neil Fleming developed the VARK learning style model in 2006. In this model he identifies four preferences for learning: v*isual* - those who like to see and read; a*uditory* - those who like to hear and discuss; r*ead/write* - those who like to read; and k*inaesthetic* - those who like to do. Although focussed on schools and education the VARK model also has

resonance for museums and the heritage sector as they seek to provide personalised learning experiences to support increased engagement (Fleming and Baume, 2006; Black, 2012).

2.2.7 Summary of findings about visitors

This section has considered the visitor and their contribution to successful achievement of engagement. Section 2.2.1 discusses the role of the visitor, confirming the importance of the visitor to the visitor engagement relationship. Literature confirms that the visitor needs and their expectations of the interpretation experience should be considered in the design and creation of interpretive digital media.

Results of recent visitor surveys indicate positive and growing participation with cultural heritage and increased levels of audience participation; although there is scope to further improve the demographic spread of visitors particularly across certain age ranges, the lower socio-economic groups and across educational backgrounds.

The use of professional marketing tools to segment audiences to gain a better understanding of visitors, their expectations and their motivations demonstrates the importance of the visitor to the heritage site. Strategies to enhance and extend the types of people who participate with, and the experience that they have of cultural services are plentiful and well documented.

Motivations of visitors are well documented and typically will be to learn, be challenged, relax, socialise, escape from the everyday and be immersed in an experience. How a visitor moves around and through a museum determines what they see, where they focus attention and ultimately what they learn or experience. Visitor patterns have been observed, assessed and categorised and the influence of '*attraction power'* and '*holding power'* has been explored within the context of museum. Route, travel, stopping and dwelling are important elements of engagement which will need to be addressed in the context of designing interpretive digital media for external sites. Social interaction can both inhibit and enhance visitor experience and a key challenge for the design of

interpretive digital media will be to facilitate interpretive conversation, encourage group cohesion and support individual engagement.

Personal preferences around cognitive styles and preferred ways of receiving and processing information influence how a visitor will engage with the material and content they are presented with. These preferences, whilst not necessarily comprehensively proven or tested are well documented and interpretation solutions should pay attention to these recognised needs and differences within the visitor audience.

This review of the literature has highlighted a gap in knowledge relating to the motivations and/or behaviours of visitors to un-stewarded external heritage sites where the historical evidence is largely invisible and the curated interpretation is minimal.

2.3 Interpretation

Heritage management has a responsibility to collect and preserve materials and to disseminate their collections in a captivating way. A good interpretive experience is one in which people have learned about the heritage and had an enjoyable experience (Heritage Lottery Fund, 2013). The role of the museum is to engage audiences directly with their collections, to gain attention, hold it and to encourage reflection (Black, 2005). Visitors to museums expect knowledge, meaning and a social experience (Kelly, 2007; Cosley et al., 2008; Falk, 2009). This section considers the literature relating to interpretation, with particular reference to the follows:

- the principles of interpretation (section 2.3.1 below); and
- models of contextual and cultural learning (section 2.3.2 page 2-40)

2.3.1 Principles of interpretation

Tilden's six principles of interpretation, defined in 1957, continue to provide the underpinning philosophy for interpretation in the museums and heritage sector. Tilden's belief was that effective interpretation leads to better understanding which facilitates appreciation. Appreciation, in turn raises respect and provides protection for our heritage. His six principles are shown here:

1. “Any interpretation that does not somehow relate to what is being displayed or described to something within the personality or experience of the visitor will be sterile” (Tilden, 1977, p11)

2. “Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information” (Tilden, 1977, p18)

3. “Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable” (Tilden, 1977, p26)

4. “The chief aim of interpretation is not instruction but provocation (Tilden, 1977, p32).

5. “Interpretation should aim to present the whole rather than a part, and address itself to the whole man rather than any phase (Tilden, 1977, p40)

6. “Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. At its best, it will require a separate programme. (Tilden, 1977, p47).

According to the Heritage Lottery Fund (HLF) effective interpretation will: catch attention; provide a connection between the heritage and the person’s own experience; be pleasurable; be interesting and meaningful; be well organised and easy to understand; meet the needs of the audience; and have a clear theme or idea to communicate.

> “Interpretation is not just about facts and figures, it is the way in which the interest, value, significance and meaning of heritage is communicated to people” (HLF, 2013).

There is a body of research considering the design of interpretive labels with recommendations as to the length, size, typography, placement and content (Serrell, 1983 and 1996; Black, 2005; Bitgood, 2014) and object handling. The role of the human interpreter, be they a guide, volunteer, docent, enabler remains paramount, “a basic principle of interpretation lies in the use of the human context to engage audiences – people relate to people” (Black 2005, p276).

2.3.2 Models of museum learning

Central to interpretation is learning and, in the context of the museum, that learning is typically informal, personal, cultural and fun. Museums and heritage sites have to distinguish between *education*, something which is *done to you*, and *learning*, something which *you do for yourself* (Kelly, 2007). Learning experiences can be both formal and informal and audiences are 'non-captive' (Ham, 2013) meaning they can exercise free will and leave the experience whenever they want. Learning in museums is motivated by curiosity (Rounds, 2004); most visitors have no need of the information they learn, they just have an interest in knowing more. Learning typically involves personal meaning making; it is self-paced and exploratory (Kuflik et al., 2011). Models of learning recommend active participation by the visitor to enhance personal meaning making and there has been a focus on interactivity; considered essential for supporting learning and leisure with children (Roussou, 2010), although whether this contributes to long term learning benefits is uncertain (Falk et al., 2004). Perry (2011) refers to *interpretive activism* and describes it as the "process of advocating for and incorporating research-based, visitor centered exhibition design principles and strategies that facilitate active visitor participation in the interpretive process" (Perry, 2011, p27). *Interpretive activism* includes the visitor being involved in *learning conversations* either with the heritage staff and/or within their own group. Cultural learning raises awareness and appreciation of heritage, which is very much in line with Tilden's principles of interpretation. Lord (2007) sees learning in this context as a transformational experience where the value is not so much in what has been learned factually but in the effect the experience has had on the interest of the visitor and their appreciation and value of objects.

A number of models have been developed to explain the museum experience, three of which are described below; Falk and Dierking's *Contextual Model of Learning* figure 2-19 pages 2-42; Kelly's *6P Model of Museum Learning* figures 2-20/2-21 pages 2-42/43); and Perry's *Selina Model of Visitor Learning*, figure 2-22 page 2-44.

Contextual Model of Learning - Falk and Dierking 2000/2012: Falk and Dierking present a *Contextual Model of Learning* to explain the museum experience, recommending that

museum staff recognise and support the individual visitor agenda and be mindful that the museum experience begins before the visitor arrives and continues after they leave. Museums should support the long term learning and leisure trajectories of their visitors, tapping into their interests and agendas.

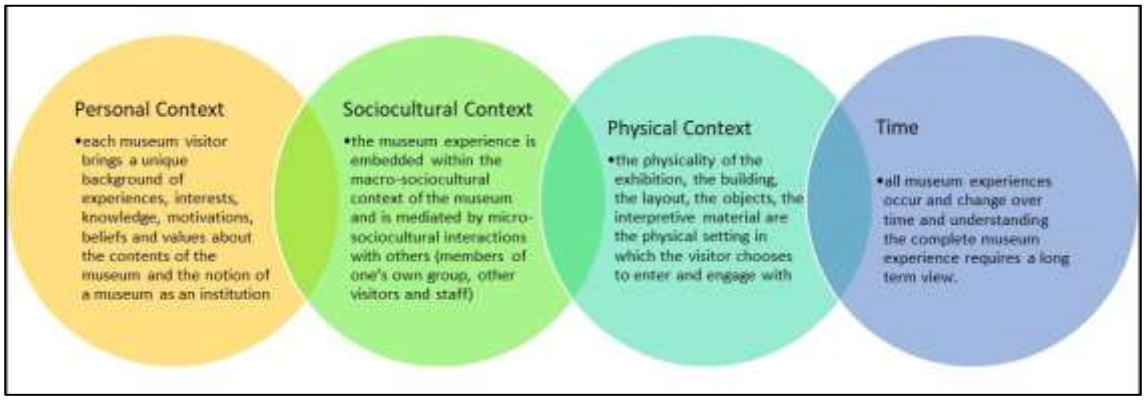


Figure 2-19 based on Contextual Model of Learning (Falk and Dierking, 2000/2012)

Whilst there is no single factor responsible for what and how people learn they identify eight influencing elements: motivation and expectations, prior knowledge and interests, choice and control, socio-cultural mediation, facilitated mediation by others, advance organisers and orientation, design and reinforcing events and experiences outside the museum.

6P Model of Museum Learning – Kelly 2007:

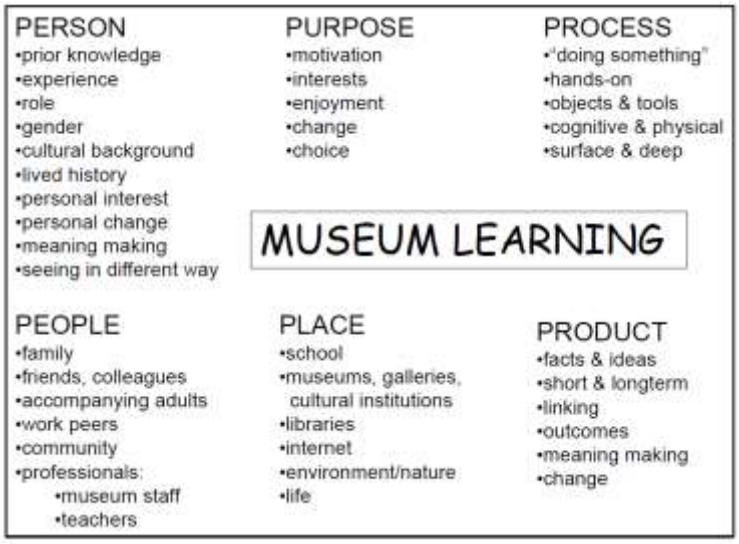


Figure 2-20 The 6P Model of Museum Learning (Kelly, 2007)

Kelly's *6P Model of Museum Learning* focusses on the socio-cultural theory of learning, stressing the importance of social interaction and group dynamics and support that the learning of an individual can be *scaffolded* by the input and influence of others. (Vygotsky, 1978). Similar to Falk and Dierking Kelly's model, figure 2-20 page 2-42 combines individual interests and motivations, the environment and social groups to constitute the overarching museum learning experience. Figure 2-21 p 2-43 identifies the implications of Kelly's model and summarises her recommendations for museums.

Figure 2-21 Implications of the 6P Model (adapted by author, based on Kelly, 2007)

Selinda Model of Visitor Learning – Perry 2011: Developed by Perry in 2011 the *Selinda Model of Visitor Learning* is predicated on three perspectives: *outcomes*; *engagements* and *motivations*, figure 2-22 page 2-44.

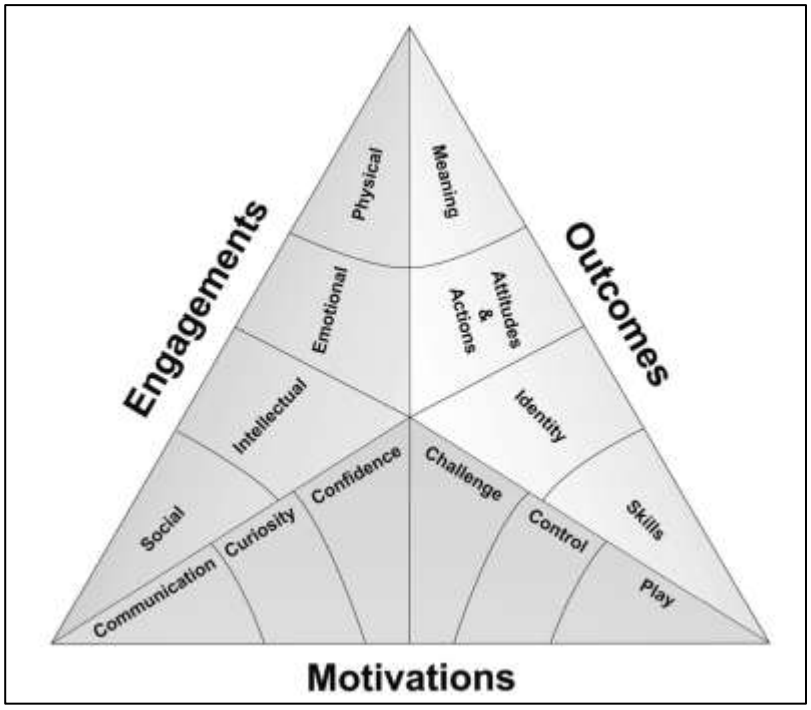


Figure 2-22 The Selinda Model of Visitor Learning (Perry, 2011)

Outcomes focuses on what visitors will take away with them: what the visitor wants to learn, what *skills* they want to develop, what *attitudes and actions* the institution is hoping to develop. *Identity* is both an input and an outcome, the outcome being how the visitor might see their place in the world as a result of the visit.

Engagements describes how the visitors interact and engage while in a museum exhibition and includes four ways of engaging: *physically; emotionally; intellectually;* and *socially*.

Motivations describe the psychological needs and desires that affect the visitor's ability to learn in informal settings. According to this framework visitors will be more likely to have satisfying experiences when their engagement with exhibits meets their needs to be part of a *communication* process, have their *curiosity*

piqued, feel *safe* and smart, be *challenged*, be *in charge* of their learning and be *playful*. To support this model Perry has also produced a framework for making learning fun with strategies for achieving the principles outlined in the motivations perspective.

2.3.3 Summary of findings about the interpretation

Key points from the literature are that an effective engaging interpretive experience is personally motivated and experienced; but facilitated and sustained by good curation design and interpretation. Visitors must be supported in controlling their experience and making their own meaning; and should be provided with opportunities to explore. Interpretation design should allow for self-paced learning with multiple pathways providing options and allowing choice. Social interaction is an important element of the museum experience and opportunities to facilitate and support this should be designed into interpretation. Interpretation should provoke interest, making the visitor curious, motivating them to discover more about the heritage. Interpretation should be designed to maintain relationship with the audience beyond the visit. These aspects will be considered and addressed in the development of the design guide (see chapter five for further details).

2.4 Visitor engagement

To explore visitor engagement research papers from the fields of museum studies and human computer interaction (HCI) and reports from the heritage sector have been reviewed with the purpose of defining engagement in the context of cultural heritage; identifying models for engagement and discovering more about designing for engagement, measuring engagement and understanding barriers to engagement. . Presented here is a review of findings in the main areas identified as follows:

- defining engagement (section 2.4.1 page 2-46);
- engagement models (section 2.4.2 page 2-47);
- the engagement experience (section 2.4.3 page 2-57)

2.4.1 Defining engagement

In recent years there has been an increasing focus on engagement and engaging people. Public engagement in particular has become a major objective for science organisations, higher education institutes and museums and archives (Black, 2005; Bitgood, 2014; CASE, 2010).

According to the English Oxford Dictionary (2018) the verb engage means to *occupy or attract* (someone's interest or attention), *involve someone in* something (a conversation or discussion). To engage with means to *participate* or *become involved in*. To engage can also be to *employ someone* or *enter into combat* or *engage the gears* of an engine. As an adjective engaging describes something as *charming* and *attractive*. Engagement can describe a relationship such as a dinner engagement, a formal agreement to marry or fight or battle between armed forces. The origin of the word engagement is early 17th century French, and comes from engager 'to pledge' and in the general sense meant a legal or moral obligation.

Mapping this definition against with the context of being an engaging museum Black (2005) argues that museums have a responsibility to: be attractive to audiences; to keep visitors 'busy'; employ their minds; allow them to participate; and keep 'in conversation' with them. Museums are bound by promise and/or contract to respond to the needs and expectations of the visitor. For Bitgood (2014) visitor engagement is associated with three conditions: a deep level of cognitive processing; a satisfied visitor experience; and effective communication of the key exhibit message. "A 'Holy Grail' for galleries and museums is to create a deep personal engagement with exhibits that leads visitors into making interpretations" (Fosh et al. 2013).

Creating good relationships with visitors is key and successful engagement is more likely to be achieved by doing things *with* people rather than *to* or *for* people. Visitors to cultural and arts venues enjoy overlapping experiences of talking and doing (Leadbeater, 2009; Simon, 2010). Based on Leadbeater's essay, *'The Art of With'* Black (2012) describes three types of cultural engagement: *enjoy* – predominantly passive processes of being entertained, watching, listening reading; *talk* – in which the content provides a

focal point for discussion, socialising and interacting; and *do* – active experiences where people can get involved, create and contribute, "With is at the heart of the engaging museum" (Black 2012, p.11)..

HCI research uses the concept of trajectories to focus on the process of engagement which is described as a transformational journey through a series of interactions (Bilda 2008; Fosh et al. 2013). Engagement is an ongoing process, not just about one visit but a relationship which is sustained, durable and has a legacy (Everett, 2009).

These descriptions suggest that engagement is a relationship between the visitor and the cultural heritage which exists both as an overall process (the visit experience) and as a range of visitor behaviours within that process. These behaviours are in response to the stimulus provided by the various elements of visit experience. Engagement is an interactive and a transformative process. Engaged visitors participate, and are changed by, their visit experience. Further exploration regarding existing models of engagement and how they identify and describe the stages and behaviours within this process is now described.

2.4.2 Engagement models

Models of engagement can be found in academic studies on museums and human computer interaction (HCI) and also in consultancy and research commissioned within for museums and art galleries. The first two models considered here are practitioner models from the museums and heritage sector. This is followed by models from academic research in museum studies, user centred design (UCD) and HCI. Note that the terminology for the person changes throughout this section and is reflective of the discipline which is at the source of the model: museums talk about visitors, HCI refers to users and some models reference participants, but the ideas on engagement are transferable and interchangeable and are applicable for this study.

Hierarchy of Visitor Engagement - Morris Hargreaves and McIntyre 2005: Produced for the Museums and Heritage Show 2005, commercial consultants Morris Hargreaves and

McIntyre presented their *Hierarchy of Visitor Engagement* in the show brochure '*Never Mind the Width Feel the Quality'*, figure 2-23 page 2-45.

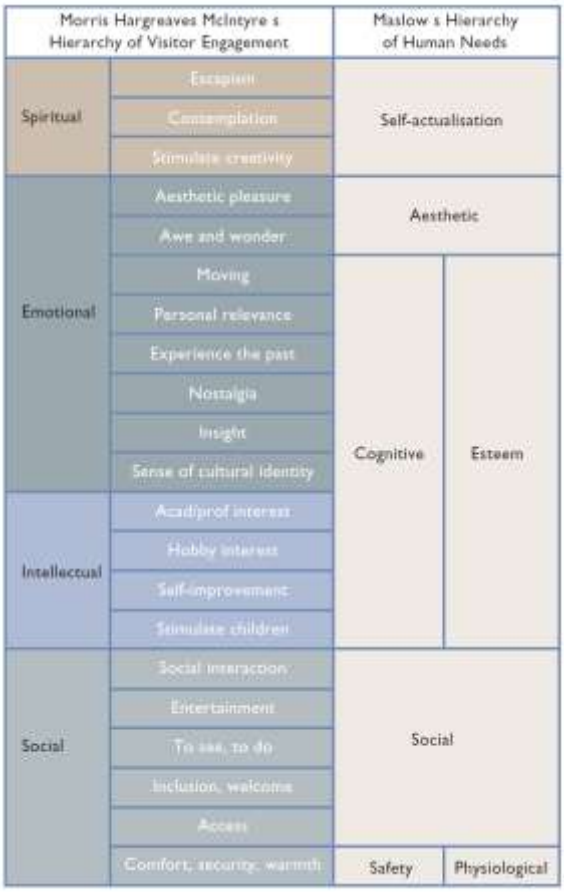


Figure 2-23 Hierarchy of visitor engagement (Morris et al. 2005)

Drawing on sociology, anthropology and behavioural psychology this model has "striking parallels with Maslow's Hierarchy of Human Needs" (Morris et al., 2005). Core to their model are the four basic visitor motivations: *spiritual; emotional; intellectual*; and *social*, see 2.2.4 for further discussion on visitor motivations. A potential weakness of this model is that the definitions of engagement are predicated on the motivations and expectations of the visitor with no reference to the objectives of the curator of the heritage. This suggests that engagement is one-sided and can only be measured by how much the visitor needs have been met. For a review of how Morris Hargreaves and McIntyre measure engagement see 2.4.3 page 2-57.

Digital Engagement Framework - Sumo and 'Inspired by Coffee' 2012: Produced by SUMO and 'Inspired by Coffee', the *Digital Engagement Framework*, figure 2-24 page 2-49, was launched at the MuseumNext Conference in 2012 with the purpose of helping organisations discover their digital potential and begin to develop their digital strategy (Visser 2012). It is useful in providing a big picture overview of the influence and importance of digital across the whole engagement agenda for an organisation and it confirms that engagement is something which requires a strategic approach and is not limited to the visit experience. However, it is too broad and too general to be particularly informative to this study.

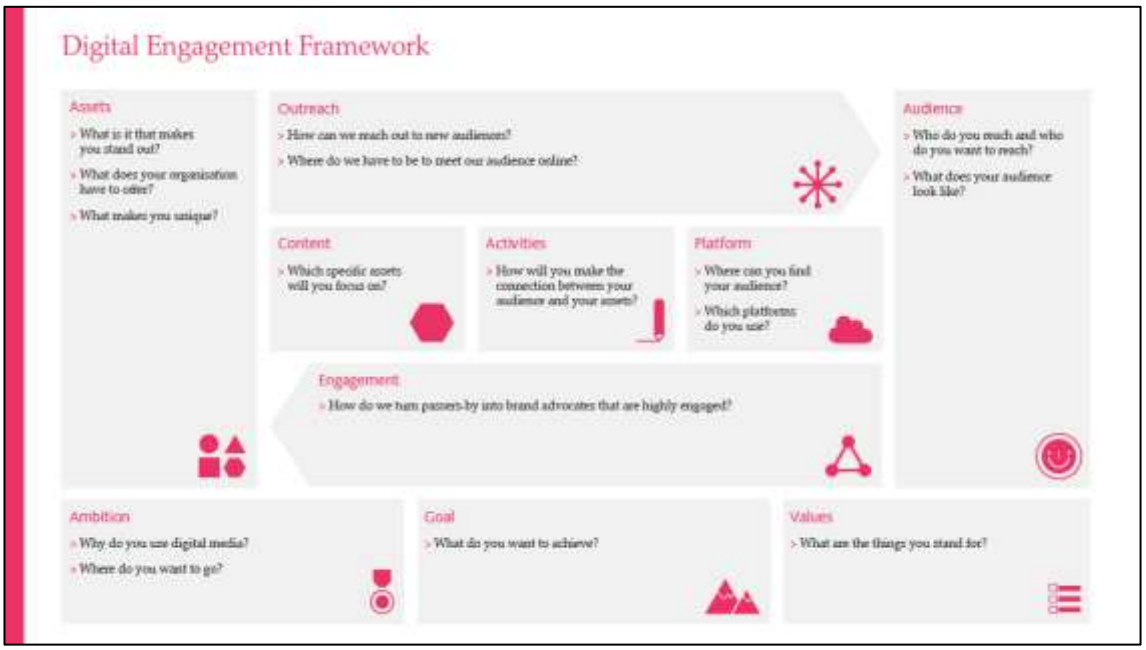


Figure 2-24 Digital Engagement Framework (Visser, 2012)

Attention-Value Model – Bitgood 2010: From the literature on museum studies Bitgood (2010, 2014) emphasises the importance of attention within the engagement process and argues that attention is a three stage continuum: *capture, focus* and *engage*, figure 2-25 p 2-50. The crucial part of this model is that attention levels are dictated by perceived value, a balance of effort and gain which can be easily disrupted by a number of variables. To effectively manage attention Bitgood proposes that designers must understand how attention is captured and focussed and the factors which prevent people from paying attention. Bitgood (2010) also provides an overview of the different

outcomes which can be anticipated from a process which engages people, a summary of which is in table 2-1 page 2-51, which go beyond learning and meaning making.

STAGE OF ATTENTION	Response Indicators	Explanatory Processes/Mechanisms	Factors that influence the experience
CAPTURE	- Look at - Feel, touch - Approach - Stop	- Orienting reflex - Searching (sequential or simultaneous) - Decision making - Physical/mental states	- Salience - Visual-physical access or Proximity - Organization/layout of elements - Perceived value - Distractions
FOCUS	- View element for few sec - Touch object briefly	Narrowing of attention from a broad frame of reference to a single object	- Isolation - Perceived value - Organization-layout -Focusing devices - Contrast with background - Distractions
ENGAGE	Read text labels Discuss content Report feelings	A number of intellectual, perceptual, and affective processes (learning, flow, inquiry, immersion, etc.)	-Perceived value - Message characteristics -Action tendencies - Physical/mental states - Qualities of the exhibit elements - Distractions

Figure 2-25 Attention-Value Model (Bitgood, 2010)

Forms of Engagement – Edmonds 2006: In their work on understanding creative engagement and the relationship between the audience and interactive art Edmonds et al. (2006) propose a fairly simple model with just three forms of engagement: *attracting, sustaining* and *relating*. *Attracting* means drawing attention to something. This might be achieved, for example, through a sudden noise or the sudden removal of noise. *Sustaining* is the process of retaining the attention of the audience for a period of time and *relating* is when the audience develops a long term interest and wants the appearance of the work again and again, rather like a music band playing their back catalogue at every concert or someone going back to see a favourite play performed in many performances over a lifetime. Edmonds highlights a lack of connection between *attraction* and *relating* explaining that the long term form of engagement is not associated with a strong initial attraction and that the attributes which encourage sustained engagement are not the same as those which attract. This differentiation between the different form of engagement, the focus on long term engagement and the need to understand the different attributes required to achieve all three contributes to

our understanding of engagement and emphasises the need to see engagement as a process of stages with different behaviours and outcomes.

Outcome	Theories/Writers	Comment
Learning		typically measured by recognition and recall, fits within the visitors existing knowledge structures fits within the visitors existing knowledge structures
Flow	Csikszentmihalyi (1990)	complete focus during some activity, full involvement and feeling of accomplishment
Simulated immersion	Coe (1986), Bitgood (1990, 1991)	the illusion of being in a specific time and place, typically felt in living history museums
Exhibition efficiency	Screven (1999)	the time and effort it takes to process the content, can be limited by personal factors such as time, fatigue, attitudes and interests
Attention Restoration Theory	Kaplan (1983, 1995)	The stresses of everyday life reduce the capacity to concentrate. Four components are required to overcome this, being away, extent, fascination and compatibility
Knowledge hierarchy assessment	Perry (1993)	There is a knowledge structure to an exhibition which can be communicated to the visitor
Assessment of family learning	Borun (1997)	A methodology to measure different levels of engagement relating to informal learning: 1. identifying, 2. describing, 3. interpreting and applying
Personal meaning mapping	Falk (1990)	A method of assessing attention - people write words, images, phrases related to the exhibit content and then explain their thoughts in an open ended interview
Experience-Benefit Analysis	Packer (2008)	engaged attention is more than learning outcomes and can by assessed through experiences (satisfying and restorative) and benefits (psychological well-being and restoration

Table 2-1 Engagement Outcomes (Bitgood, 2010)

Understanding the User Experience – Norman 2004: As mentioned in the introduction to this section HCI regards engagement as a journey and an experience. Norman (2004) breaks experience down into three levels: *visceral*, *behavioural* and *reflective*. At the *visceral* level an experience is based on perception which gives rise to immediate judgements, for example a thing is good or a thing is bad, something is safe or something is dangerous. At the behavioural level the experience is expectation driven and so a positive effect results from feeling in control and from the understanding that arises during the use of a product. Lack of control or a mismatch between the expectations of

the user and the actual experience they have produces negative effects. At the *reflection* level a person is conscious of emotional feelings and is intellectually driven using their own history of prior experiences, self-image and persona meanings to evaluate any experience. This understanding of experience underpins much of the writing on engagement and user experience within the HCI community.

Four Threads of Experience/Six Sense-making Processes - McCarthy and Wright 2003: In their writings on user experience McCarthy and Wright (2003) propose an integrated framework with four intertwined threads of experience and six sense making process. The four threads of experience are *compositional*, *sensual, emotional* and *spatio-temporal*. *Compositional* refers to narrative structure and how the elements of the experience fit together to form a coherent whole. *Sensual* is about the concrete, palpable and visceral nature of the experience and explores how the design, texture and overall atmosphere makes the user feel. *Emotional* refers to the value judgements that someone makes: most importantly for this study this is how people tend to remember things. *Spatio-temporal* is the effect that space and time will have on an experience and how this will affect a person's willingness to linger or re-visit a place.

Linked to the four threads of experience are the six sense-making processes which are *anticipating, connecting, interpreting, reflecting, appropriating* and *recounting*. *Anticipating* refer to the expectations we bring to an experience. In terms of using digital interpretation in this study it will be important to consider the expectations that visitors will have in using digital devices, such as mobile phones and tablets to guide them round heritage sites. *Connecting* is about the assessment a person might make of a place they are visiting. These judgements are usually done quickly and without much thought. *Interpreting* is what the user does while they work out what is going on and how they feel about it. *Reflecting* occurs with the person examine and evaluates what is happening during an interaction. It is at this point people reflect on the feelings of frustration or pleasure that are part of the experience. *Appropriating* happens when people make the experience their own and can relate it to our sense of self, our personal

history and our anticipated future. *Recounting* is the dialogical process to telling others about our experience during which people might change the meaning of the experience.

A Model of Creative Engagement – Bilda et al 2008: Working on a range of audience studies in relation to a range of artwork Bilda has developed a model of the engagement process in which he proposes that the mode of engagement shifts in terms of audience interaction, figure 2-26 page 2-53. This shift is from intended actions, through deliberate actions and can lead to a sense of control. Four interactive phases are identified: *adaption, learning, anticipation* and *deeper understanding*.

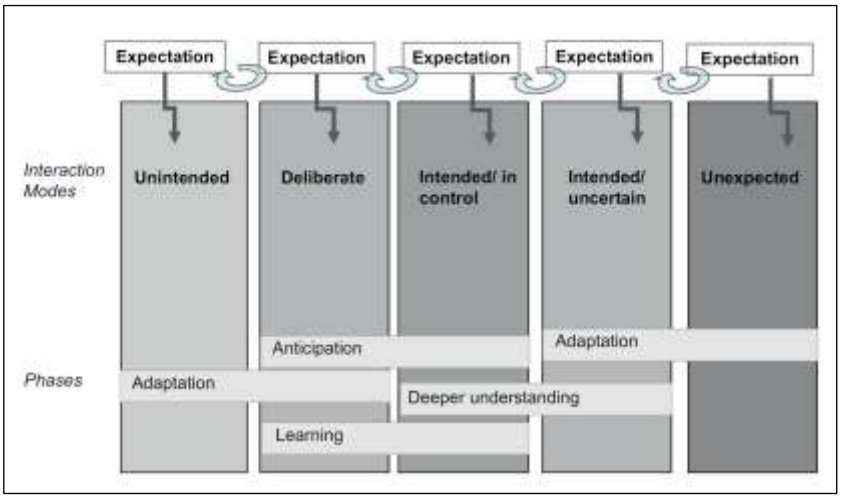


Figure 2-26 The Engagement Framework (Bilda et al. 2008)

During the *adaption* phase visitors adapt to the changes in the environment. They work with uncertainty, learning how to behave and how to set expectations. This phase occurs during a shift from unintended mode to deliberate mode. During the *learning* phase visitors develop and start to create their own internal/mental model of what the system does. In doing so they develop (and change) their expectations, emotions, behaviours, memories and beliefs. The participant interprets exchanges, explores and experiments using feedback from the system. This phase can occur from deliberate mode to intended and in control mode. During the *anticipation* phase participants now know what they system will do and can predict interaction. When participants reach *deeper understanding* they are able to judge and evaluate the art work at a higher conceptual level, possibly noticing new aspects of the work that they had previously not seen. This

phase can occur from intended/in control mode to intended/uncertain mode. A key aspect of this model is the transformative nature of the experience for the participant.

The 'Pleasure Framework' – Costello

- **Creation** is the pleasure participants get from having the power to create something while interacting with a work. It is also the pleasure participants get from being able to express themselves creatively.
- **Exploration** is the pleasure participants get from exploring a situation. Exploration is often linked with the next pleasure, discovery, but not always. Sometimes it is fun to just explore.
- **Discovery** is the pleasure participants get from making a discovery or working something out.
- **Difficulty** is the pleasure participants get from having to develop a skill or to exercise skill in order to do something. Difficulty might also occur at an intellectual level in works that require a certain amount of skill to understand them or an aspect of their content.
- **Competition** is the pleasure participants get from trying to achieve a defined goal. This could be a goal that is defined by them or it might be one that is defined by the work. Completing the goal could involve working with or against another human participant, a perceived entity within the work, or the system of the work itself.
- **Danger** is the pleasure of participants feeling scared, in danger, or as if they are taking a risk. This feeling might be as mild as a sense of unease or might involve a strong feeling of fear.
- **Captivation** is the pleasure of participants feeling mesmerized or spellbound by something or of feeling like another entity has control over them.
- **Sensation** is the pleasure participants get from the feeling of any physical action the work evokes, e.g. touch, body movements, hearing, vocalizing etc.
- **Sympathy** is the pleasure of sharing emotional or physical feelings with something.
- **Simulation** is the pleasure of perceiving a copy or representation of some-thing from real life.
- **Fantasy** is the pleasure of perceiving a fantastical creation of the imagination.
- **Camaraderie** is the pleasure of developing a sense of friendship, fellowship or intimacy with someone.
- **Subversion** is the pleasure of breaking rules or of seeing others break them. It is also the pleasure of subverting or twisting the meaning of something or of seeing someone else do so.

Figure 2-27 The 'Pleasure Framework' (Costello et al., 2007)

The Pleasure Framework - Costello 2007: Working with Edmonds and in the context of making interactive art Costello focussed on the role of play in stimulating engagement and exploration resulting a taxonomy which she refers to as the 'Pleasure Framework'. In summary the framework is synthesised into thirteen categories, figure 2-27 p 2-54.

Most frameworks focus on cognitive engagement and so Costello's work is a useful addition offering an alternative focus with some illuminating suggestions regarding emotional responses.

Trajectory Framework for Interpretation – Fosh et al. 2013 HCI research introduces the concept of 'trajectories' to further explore the engagement of visitors with exhibits and artworks.

Temporal trajectories can represent the "the complex mappings between story time and clock time that are found in interactive narratives such as computer games an interactive performances" (Benford et al. 2008, p73) A trajectory describes the temporal journey that the person undertakes as part of their experience when visiting a museum, art exhibition or even an historic garden. Journeys are steered by participants but also shaped by narratives that are embedded into spatial, temporal and performative structures by authors and curators. Trajectories fall into three categories: *canonical; participant;* and *historical*. *Canonical trajectories* express how the author intended the mapping of the time clock time in respect of the plot and the schedule of experience. *Participant trajectories* represents the actual journey taken by the participant through the experience as they interact with whatever elements they encounter. *Historical trajectories* are the subsequent selection and re-use of segments of recorded participant trajectories to create histories of past events.

Recognising the difficulties of achieving rich engagement Fosh et al. devised a trajectory for interpreting a sculpture exhibition in Rufford Abbey, Nottingham, an historic country house with extensive gardens. Their local trajectory defines five stages of engagement: *approach, engage, experience, disengage and reflect,* figure 2-28 p 2-56. Their research demonstrated that a carefully thought out local trajectory can enhance engagement with each sculpture. Subsequent recommendations from this research are that the application of trajectories to the design of mainstream cultural visiting experiences could be productive and that trajectories through interpretation, moving back and forth between openness and closure and through multiple interpretations, may be suitable for many cultural experiences. The application of a local trajectory to a large external

site is of particular interest to this study as it offers insight into the potential navigation of an engaging experience with other external cultural heritage sites.

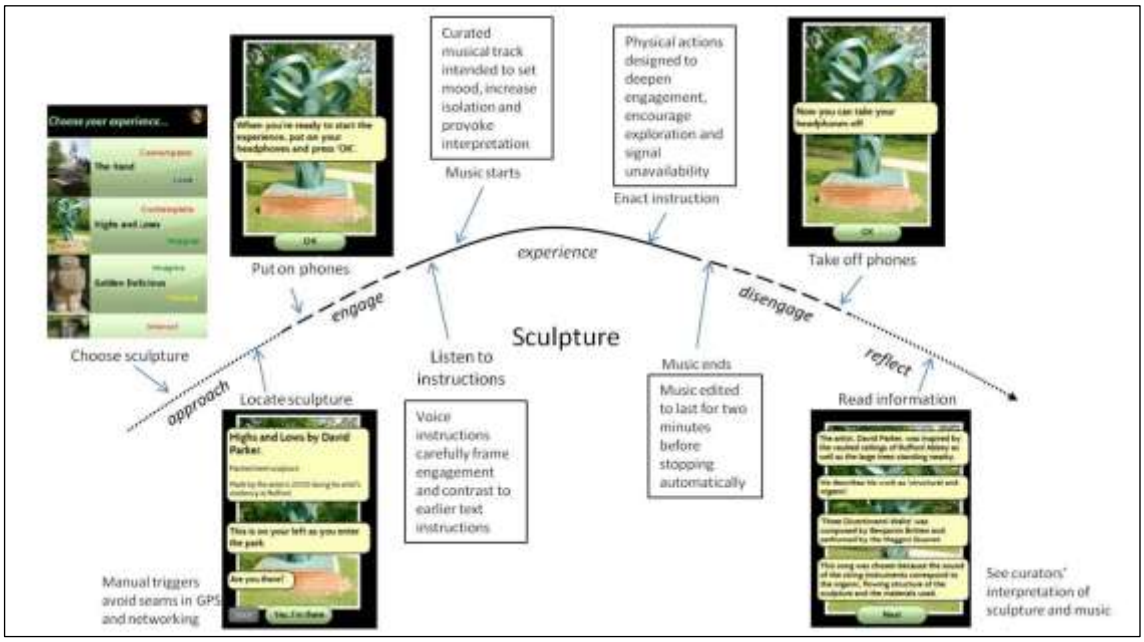


Figure 2-28 Design of the local trajectory (Fosh et al., 2013)

2.4.2.1 Summary of models and implications for this study

Each of the models described in 2.4.2 (page 2-47) contributes to the development of the *design guide*. The Digital Engagement Framework of Sumo and 'Inspired by Coffee' (2012) emphasises the need to consider engagement at a strategic level and to pay appropriate attention to this at the objective setting stage of a project. In terms of the '*stages of engagement'* Bitgood's three stage continuum of *capture*, *focus* and *engage* (2010) identifies the fundamental process of engagement. The *relating* element of the Edmonds model (2006) confirm the need to consider long term engagement through repeat visits and a continued relationship. Fosh et al.'s work on trajectories (2013) encourages practical consideration of what happens during an actual visit or encounter with useful reference to the need to conclude and *disengage* in an appropriate and satisfactory manner. Norman (2004) focusses on the *experience* of engagement and the *behaviours* exhibited by the visitor. This provides a good starting point for identifying the *'states of engagement'*: the experiences felt and the behaviours exhibited by the visitor demonstrating that they are engaged. Bilda et al.'s focus on *deeper understanding*

(2008) describes how rich engagement might be identified and the *Hierarchy of Visitor Engagement* by Morris et al. (2005) is helpful in identifying motives and outcomes beyond the *intellectual* in terms of the *spiritual, emotional* and *social*. McCarthy and Wright's work on *experience* (2003) provides a useful set of behaviours associated with *sense-making* which can be used to assess the levels to which a person has been engaged. Chapter five describes how combining and building on these frameworks and models will contribute to the development of the *design guide*.

2.4.3 The engagement experience

2.4.3.1 Designing for engagement

Many of the elements required to create engagement have been described in the models in section 2.4.2 page 2-47. Additional thought should be given to designing for appropriate levels of engagement, for example ensuring that the interpretive digital media products do not attract an excessive number of visitors at the same time one exhibit (Derboven, 2012). Bitgood (2014) explains how interpretive text, interactive exhibits and immersive experiences can facilitate engaging experiences. Chamberlain (2014) used mobile phones with location-based technology to access and create interpretive media concluding that being able to explore content, link content directly to locations and create your own content were the 'three pillars of engagement'. Further consideration of the potential of mobile apps to address engagement is discussed in 2.6. Facilitating extended engagement and creating deeper connection through participation and the sharing of memories is demonstrated by Ciolfi et al. (2012).

2.4.3.2 Measuring engagement

To measure engagement Morris Hargreaves and McIntyre calculate the depth of engagement of the visitor by measuring their usage of interpretation materials. The '*depth of engagement'* scale is described as having four factors which escalate in order of importance: *orientation*; *exploration*; *discovery;* and *immersion*, figure 2-29 page 2-58. It is unclear how this scale has been derived and why *immersion* is considered to be more significant than the lower levels, although there are clear similarities with

Bitgood's Attention-Value Model (2010, 2013) which also has basis in a psychological understanding of attention.

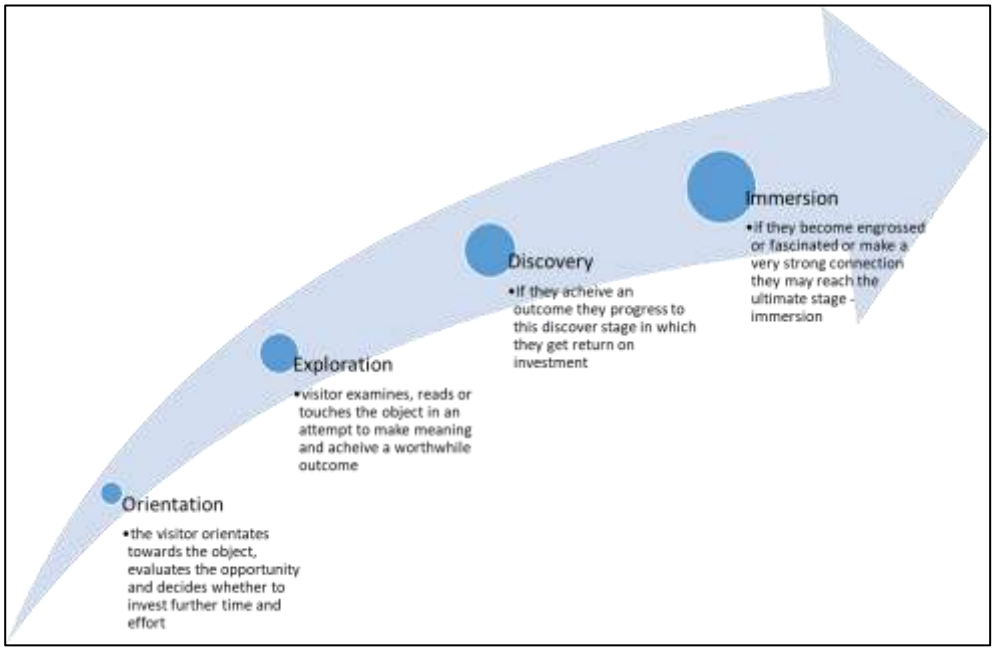


Figure 2-29 Depth of engagement (Morris et al 2005)

Use of interpretation materials is split into three categories: *'no use of interpretation material*'; *'use of audio, visual or textual material provided by the museum or gallery'*; and *'interpretation mediated by another person'*, either staff or a member of the visiting party. An example of an engagement matrix for a successful exhibit at the British Galleries of the Victoria and Albert Museum is shown in figure 2-30 page 2-59. In addition to these quantitative measures visitor opinion is sought through interviews, comments and the creation of fulfilment maps in which visitors were asked to complete a mind-map before and after their visit in response to the question *'what do you hope to get from today?*' Again the focus appears to be on using visitor expectation rather than the objectives of the museum or gallery as a benchmark.

Traditional methods of assessing visitor engagement include: measuring '*holding power*' – the length of time an exhibit maintains the interest of the visitor; analysing group discussions; self-reported ratings of such things as satisfaction, feeling involved, being immersed (Bitgood 2014); visitor tracking; and the qualitative study of comment cards, visitor diaries, interviews and real time conversations (Black 2005). Whilst engagement

is often measured through time spent (Gutwill, 2006) duration of stay is not considered to be a consistent measure of high or deep engagement (Tisdal, 2004). Sanford (2010) measured engagement levels by determining the extent to which the family used the exhibit as the designer intended (Ansbacher, 1999). Rich data can be gained through techniques using interpretive talk (Everett, 2009).

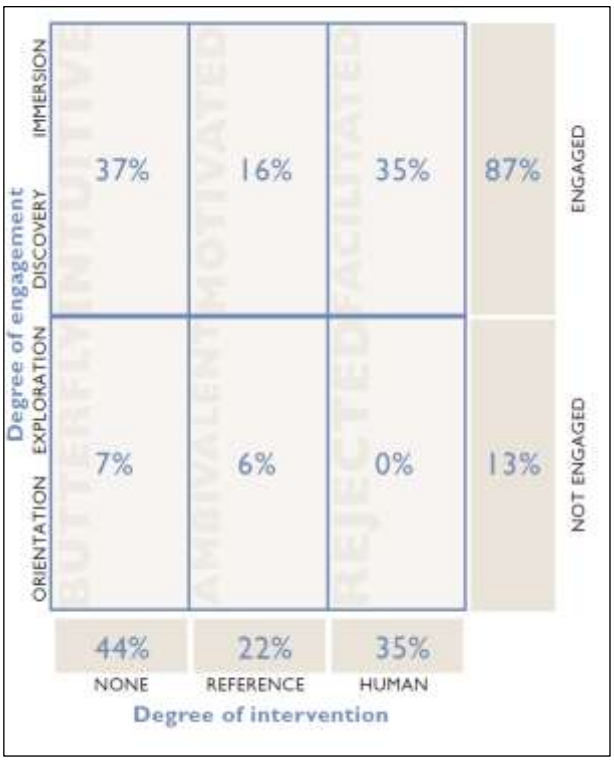


Figure 2-30 Engagement Matrix (Morris et al 2005)

2.4.3.3 Barriers to engagement

A number of barriers to engagement are identified within the literature. Not knowing what to do or feeling embarrassed can be a reason for people not engaging particularly with interactive exhibits and artworks (Brignull, 2003; Hinricks, 2008; Hornecker, 2016; Derboven, 2012). Mobile guides can be very effective in increasing the time spent in a museum and looking at particular object but they also have a negative impact on the social relationships of groups; reducing proximity, interaction and conversation (Lanir 2003). Attraction which is perceived to be too easy by the visitor can result in boredom and subsequent disengagement (Bilda et al., 2008). Social pressures, following other

members of the group and trying to maintain group cohesion are all reasons why a person might end engagement early (Tolmie et al., 2014; Bengler, 2015).

2.4.4 Summary of findings about engagement

Engagement is an interactive, participative and transformational relationship between the visitor and the cultural heritage which exists as a process, and can be observed as a range of behaviours exhibited by visitors within that process. A number of models exist to explain various elements of engagement and expected behaviours but the context of these is largely within an indoor museum or arts setting using digital and non-digital interactives and the focus is sometimes limited to one stage of the process, most frequently the visit itself.

There is a gap in what is known about the depth of engagement of visitors to outdoor heritage using interpretive digital media and an absence of a model which fully encompasses all stages of engagement or all the behaviours associated with these stages.

2.5 Digital Solutions

Drawn from reports and good practice guidance from the heritage sector and academic articles from a range of disciplines including HCI, interaction design, sonic interaction design, museum studies, computer-supported cooperative work (CSCW), tourism studies this section reviews the literature on digital design for interpretation and engagement identifying theories, principles and models of good practice and key themes for the design of interpretive digital media within the context of cultural heritage. A number of case studies are examined to evidence the success and challenges of designing and implementing digital products to interpret and connect with cultural heritage sites. Presented here is a review of findings in the main areas identified as follows:

- Digital design for interpretation (section 2.5.1 page 2-61);
- Design themes for interpretation and engagement (section 2.5.2 page 2-71); and

- Interpretive digital media – case studies (section 2.5.3 page 2-84).

2.5.1 Digital design for interpretation

The design of interpretive digital media is multidisciplinary and draws on different practices and influences. The models, theories and good practice described here have been developed to address digital design for the following situations: the interpretation of heritage, learning in museums; augmented and virtual reality; participation and collaboration; and location-based/location-aware devices, each of which is pertinent to this study.

2.5.1.1 Models and frameworks for interpreting heritage

A number of digital design models and frameworks relating to the development of interpretive digital media in the context of museums and heritage were reviewed. Each is now described with comment as to their relevance and usefulness for this study.

Virtual exhibitions basic design philosophy - Johnson 1997:

Virtual exhibitions – basic design philosophy

- **Intuitive**: visitors should immediately understand how to interact with the exhibit
- **Seamless and natural**: the interpretation would not be presented through menus, windows or any other form of desktop metaphor
- **Consistent**: keeping in line with human computer interaction principles buttons would be consistent in appearance, function and location
- **Durable:** the system should be able to cope with visitors being new to this type of system and should be able to respond appropriately if the visitor walks away at any point during the programme.

Figure 2-31 Virtual exhibitions design philosophy (Johnson 1997)

An early example of using virtual reality (VR) in heritage exhibitions is from the Natural History Museum, London. Described as a unique and experimental exhibition the *Virtual Endeavour Experiment* displayed computer generated images of the interior of Captain Cook's sailing ship *Endeavour* enabling small groups of visitors to move freely around the VR exhibition through use of a control panel (Johnson, 1997). In designing the

exhibition the creators established the following fundamental principles, figure 2-31 page 2-61. Despite the age of the principles and the advances in VR technology and HCI studies all four characteristics remain valid features of good design practice and should be considered within the development of the theoretical frameworks.

CHeR Cultural Heritage Resources Model – Ardito et al 2010: Concerned about the expense of creating and maintaining digital media assets Ardito et al (2010) devised the CHeR model, proposing that adequate modelling and digitising of data would enable expensive resources to be more easily used to develop additional and alternative applications.

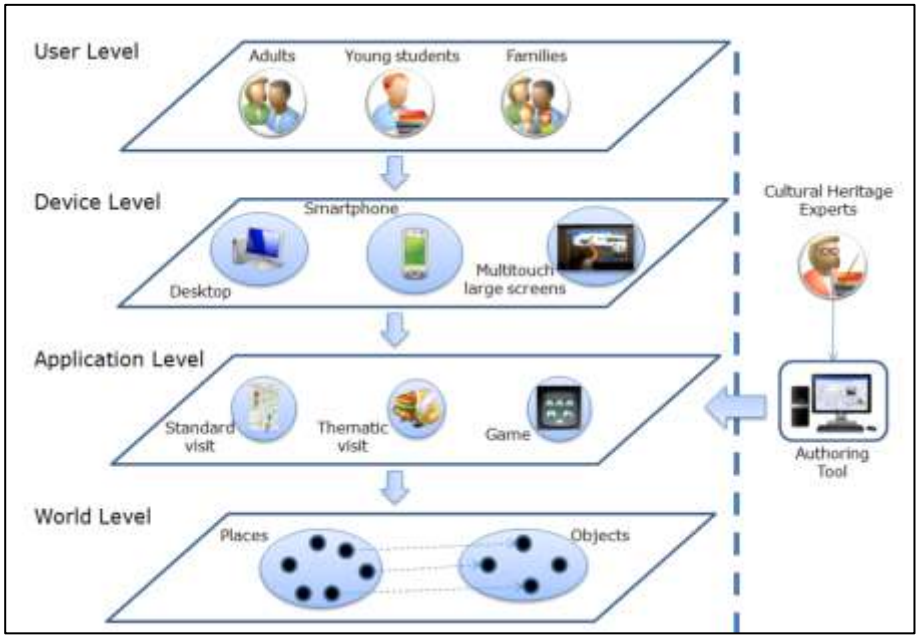


Figure 2-32 CHeR Model (Ardito et al., 2010)

The CHeR model organises resources in a way which enables their use by a multitude of applications to support different types of visitors in an engaging experience of cultural heritage, figure 2-32 page 2-62. The model and software framework provides an authoring tool for cultural heritage experts allowing them to create applications by combining the resources in the model. The model shows four layers: *User level* the categories of potential users; *Device level* the variety of devices which might be supported; A*pplication level* the types of applications which might be created and *World level* the different multi-media resources used to create the specific application.

CHeR relies on an end-user development approach and is a useful addition to this section on design frameworks as, like the theoretical design frameworks for this study, it provides guidance for non-digital experts in the creation of digital media products.

Heritage Lottery Fund: Using technology in heritage projects 2012: Published in 2012 the HLF good practice guidance contains clear and practical advice for heritage practitioners wishing to embark on digital projects.

Figure 2-33 Using digital technology in heritage projects (HLF, 2012)

Pitched at people bidding for HLF funds this documentation identifies typical interpretive technologies as being audio guides, interactive information displays and smartphone applications with location-specific content. Digital technology should be fit for purpose: meet the needs of the audience, use appropriate technology, comply with relevant standards and provide value for money. Drawing on their own research findings

(HLF, 2012) the guide provides checklists with advice on objective settings, suggestions on how to create an engaging digital product examples of digital activity and recommendations on how to include user generated content. Summarised in figure 2-33, page 2-63 is an illustration of the suggestions which are most relevant for this study. A summary of the recommendations for digital design includes: building ways for your audience to work collaboratively; ensuring there are different levels of engagement; providing ways for the audience to connect with experts; offering blended learning choices; allowing the audience to be guided initially by their own preferences and insights; deepening engagement by encouraging people to explore and find out more; focussing attention on the heritage and not on the device and enabling people to contribute and share their own memories, stories and images. This guidance confirms many of the themes found in the academic research literature on effective digital design and provides the researcher with a useful framework on which to build the *design guide*.

Mobile Visitor Experience Design: MoVE – Mason 2013:

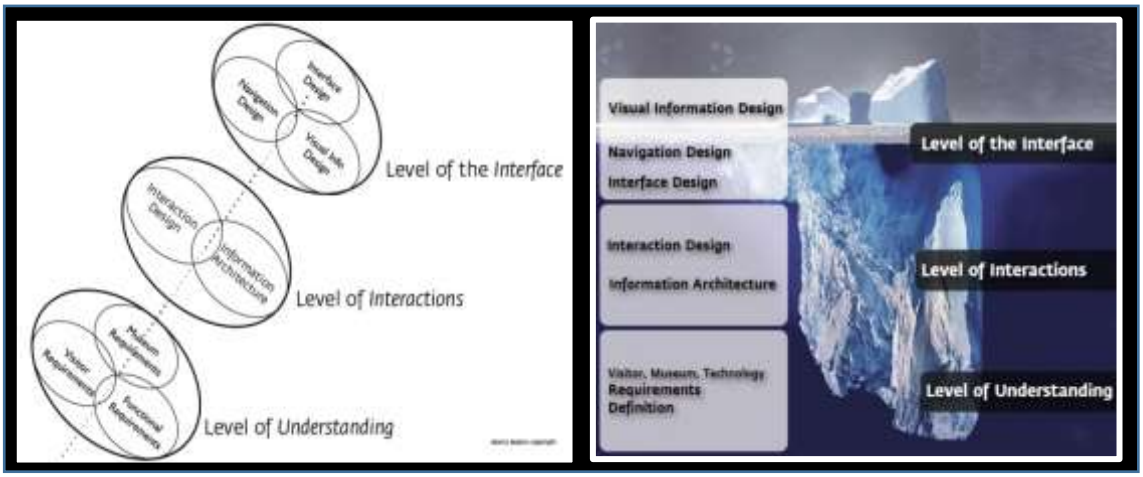


Figure 2-34 MoVE Design (Mason, 2013)

Mason (2013) recognises the complexity of designing interpretive digital media reiterating the multi-disciplinary approach required to achieve effective product development. He proposes an experience design process which filters through an interdisciplinary approach addressing levels of stakeholder requirements, interactions and interface design, figure 2-34 page 2-64. Mason argues that this approach will help designers communicate more effectively with all the stakeholders throughout the

project, allowing the heritage site/museum to develop innovative interpretation products which are coherent in their mission and relevant to their visitors. Whilst this model is useful in highlighting the complexity of the design process, it does not appear to include factors such as working in an external environment, presenting invisible heritage or working with audiences which are unidentified, all of which are aspects of this study and would need to be included and addressed.

The Smart Heritage Framework – Lupo and Ozdil 2013: By mixing different types of technologies, modalities of interaction and user experiences Lupo and Ozdil (2013) propose a soft approach to design, focused more on people's relational values than hard technology infrastructures and platforms. They describe 'smart' heritage as being 'relational' in that it builds interconnections, re-generating connections between place, context, users and culture. They argue that "technologies enable sense and meaning of the heritage by creating (or re-creating) connections between the heritage and its place of origin (if the heritage has been dislocated) or its new context (if the heritage has been re-contextualised), between the heritage and other forms of patrimony (physically or ideally in relation with it), between heritage and people and between people and people" (Lupo and Ozdil 2013, p 161).

The smart heritage framework is a matrix of *content generation* and *types of experience,* figure 2-35 page 2-66. Content generation is categorised as one of three options: *curated* by an author; *participative or collaboratively* generated or '*auto-poietic*', where the heritage is self-evolving or re-configuring. User experience is also divided into three: *instant* -when the access to the multi-sensorial, multi-layered and connective cultural content is on demand by user request and therefore expected; *explorative/intensive* - when the cultural content is accessed through serendipitous discovery, and *incidental* - when the cultural content is enriched through self-reconfiguration and evolution of the heritage. Their research provides evidence of both the *instant* experience where the digital technology provides information exchange between the visitor and the cultural content, and *intensive*, where 'smart' technologies such as augmented reality simulate the past to create connections between then and now which the visitor discovers.

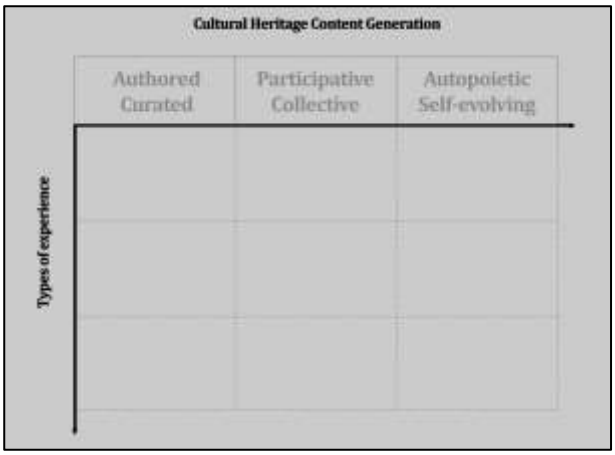


Figure 2-35 The Smart Heritage Framework (Lupo and Ozdil, 2013)

This model focusses on the relationship between the visitor and the heritage encouraging designers to think about the quality of the experience which can be created and the depth of engagement which could be achieved through more creative and exploratory processes rather than through prescriptive and highly authored content. Allowing scope for visitor interpretation and providing opportunities for visitors to contribute potentially creates a more dynamic visitor experience. Consideration of visitor control, visitor contribution to interpretation and the use of a creative, exploratory approach to content delivery are key elements for deepening engagement and will be addressed in the design of the theoretical frameworks.

2.5.1.2 Learning in museums

Learning in museums has been covered in section 2.3.2 page 2-45 and there is further discussion on mobile learning in 2.5.2.6 page 2-79. Using ubiquitous computer technology to stimulate active participation, involvement and learning in a museum exhibition Hall and Bannon (2006) developed a design framework to support the use of digital media to enhance children's learning in museums. A summary of their findings is illustrated in table 2-2 page 2-67 which provides an overview of the eight design themes, 12 experiential criteria and five design processes. Whilst the focus of this is on children there are good observations and recommendations regarding design principles for digital media to support learning generally within a heritage setting with clear parallels to other guidance found in different disciplines regarding the value of understanding the user, being clear about the objectives of the museum/heritage site, creating

engagement, supporting collaboration and participating and promoting curiosity to support effective meaning making.

Design themes	Design guidelines	Design process
1. *Materiality*: handling and tactual interaction are central to learning and meaning making 2. *Narrativity*: storytelling and narrative creation are pivotal in educational development 3. *Sociality*: collaboration between the children and their significant others 4. *Activity*: children should be activity interpreting material for themselves 5. *Multimodality*: supporting somatic learning, engaging with the exhibits using all the senses 6. *Engagement*: children should find the experience enjoyable and be motivated to participate 7. *Computer as augmented tool*: technology should be easy to use and unobtrusive 8. *Pedagogical activity*: children should learn from the exhibition	1. Provide a narrative structure – with clear learning objectives and a coherence to the activities 2. Create and inviting exhibition space 3. Incorporate the children's contribution 4. Integrate the computing –the computing aspect is unobtrusive 5. Sustain the children's curiosity 6. Complement the formal history pedagogy 7. Support somatic learning – opportunities for children to learn through all the senses 8. Facilitate both individual and group interaction 9. Encourage discovery learning 10. Support different types of visits 11. Incorporate a variety of activities to maintain interest 12. Timely and relevant intervention is provided – experts are available as and when help is required	1. Children's perspective 2. Curricular and educational perspective 3. Museum perspective 4. Physical-spatial requirements – regarding the location 5. Technical exploration - an iterative design process where technology is only selected if it fits with the overall narrative design of the experience

Table 2-2 Ubiquitous computing to support children's learning (Hall and Bannon, 2006)

2.5.1.3 Participation and collaboration

Participation and collaboration are consistent themes across the literature in relation to designing interpretive digital media. The inclusion of user-generated content is a typical way of achieving this and Fitzgerald (2012) provides guidance and an authoring tool for such content, described below. Gamification is another effective way of encouraging visitors to participate and the principles of good game design are also explored here with a model of good practice presented (Wetzel et al. 2008).

An authoring framework for user-generated content for location-based learning – Fitzgerald 2012: Developed through analysis of existing user-generated content Fitzpatrick's authoring framework is pertinent to this study as the focus of her research is on tools to support informal learning in outdoor settings. She proposes a framework encompassing six dimensions: landscape domain; types of communication; use of language/media related to the landscape; knowledge level of content; contextual aspects and types of interaction figure 2-36 page 2-68.

Landscape domain	Type of communication	Use of language/media related to the landscape	Knowledge level of content	Contextual aspects	Interaction – try to include:
1. Form of landscape 2. Common knowledge 3. Science 4. History 5. Contemporary use 6. Myth 7. Symbol 8. Art	9. Suggestion 10. Hint or warning 11. Conversation 12. Practical task 13. Reminiscence 14. Short textual description 15. Exhortation (e.g. 'look carefully')	16. Describe shape, colour, size 17. Use emotions or personal response where appropriate 18. Use simple English (short, commonly used words) where possible 19. Avoid jargon but do use appropriate language 20. Be culturally sensitive 21. Be clear and concise 22. Orient the visitor appropriately	23. *Domain-specific:* • Beginner • Intermediate • Advanced • specialist 24. Age-related? (children might not have the same knowledge or level of understanding as an adult) 25. Needs prior knowledge?	*Temporal:* 26. Is this info related to the time of year or the seasons? 27. Is this info related to time of day? 28. Visibility of the landscape and its features/landmarks *Available resources:* 29. Other people 30. Experts 31. Leaflets 32. Notices/signs	33. Authenticity 34. Relevance to everyday life 35. Element of fun 36. Anything unusual or unexpected 37. Opportunity for reflection by the user 38. Respect for others and for the environment 39. The story behind the visible (e.g. photosynthesis in a leaf)

Figure 2-36 Guidelines for authors of geo-located information (Fitzpatrick, 2012)

Although the framework is intended for use in the authoring of user-generated content the principles can be adapted to inform the authoring of new interfaces and content by heritage practitioners and their associate designers and is therefore useful to consider in the context of this study.

Guidelines for Designing Augmented Reality Games – Wetzel et al 2008:

Augmented reality (AR) enhances the real world by overlaying existing reality with virtual objects. AR can be a powerful way of providing presenting heritage giving the visitor the illusion of a richer environment and potentially an immersive and interactive experience. Game design and theories on immersion and flow are key sources of information to guide good practice in this area. In trying to identify what makes a truly good augmented reality game Wetzel et al (2008) produced a set of guidelines to help design and evaluate digital immersive experiences, figure 2-37 page 2-69. Drawn from their own research and observations of three mixed reality games these guidelines provide specific recommendations on the relationship between real and virtual space, social interaction, the use of augmented reality technologies, the maintenance of consistent themes and the concept of 'presence'. As with other models and frameworks reviewed in this section there are overlapping themes such as: keeping things simple and intuitive; the importance of creating meaningful content; creating clear connection to the real space; and allowing for collaboration and the ability to share the experiences.

These themes will be considered and incorporated into the theoretical design frameworks for this study.

Experiences First, Technology Second	Design the experience first then consider the relevant technologies.
Stick to the theme	Select technologies which are relevant to aspects such as time period and ambience
Do not stay digital	Use a combination of real and virtual elements such as paper maps.
Use the Real Environment	Make use of the real world location, beyond simply locating virtual elements in a real space.
Keep it simple	Design interaction schemes which are easy to understand and use.
Create Sharable Experiences	Allow other people to take part in the experience, for example by using tablet PCs and the magic lens metaphor rather than a head mounted display
Use Various Social Elements	Allow players to interact with virtual characters, other players, non-players and actors
Show Reality	Do not augment spaces so that the underlying real components are totally obscured
Turn weaknesses into strengths	Use potential technical problems as elements within the gaming experience
Do not just convert	Do not simply convert a game to augmented reality
Create meaningful content	The 3d content in the game should add something interesting to the game.
Choose your tracking wisely	Different tracking methods have different characteristics that should be taken into account.

Figure 2-37 Game design principles (Wetzel et al., 2008)

2.5.1.4 Situations and locations

Situation and place are highly important elements of this study and so models which address designing for locations and the situational aspect of effective interpretation have been included in this review. Two models have been identified in relation to this, both of which are from the field of human computer interaction: one which focuses on human factors and relates to the principles for designing 'in use' (Maceli and Atwood, 2011) and the other which considers the importance of place and is related to the field of computer-supported cooperative work (CSCW) (Jones et al., 2004).

Principles for Designing in Use – Maceli and Atwood 2011: Drawing on Gibson's ecology of psychology (1979) and Suchman's situated action (1987) Maceli and Atwood (2011) suggest a series of principles directly relating to the use of a product with reference to environment and the setting in which a product will be used, figure 2-38 p 2-70.

People like systems where they can:

1. **Connect** with other people with similar needs and interests, both nearby and far away.
2. **Reach out** and converse with other people in real-time, while they are using the system.
3. **Combine** it with other tools and systems they use regularly.
4. **Begin using it quickly**, without a lot of help or instruction.
5. **Adapt** it to their personalized needs.

Figure 2-38 Principles for Designing in Use (Maceli and Atwood, 2011)

Familiar themes for inclusion in the guide include connection, collaboration and opportunities to adapt and personalise products. The importance of being able to use things quickly and intuitively, without significant need for instruction are mirrored in writings on usability and accessibility.

The P3 Systems Conceptual Framework – Jones et al 2004:

P3-System Design Approaches		Synchronous Communication or Synchronous Location Awareness	Asynchronous Communication or Asynchronous Location Awareness
People-Centered	Absolute User Location	Provides remote awareness of current user location *Where are my buddies now?* Active Badge – FIND Ulocate – current location	Provides people's location histories *Where have my buddies been?* Ulocate – location history
	Co-location / Proximity	Provides real-time inter-user co-location for the exchange of social information *Who's close to me now? Is there anybody like me here?* Meme Tags, LoveGety	Provides co-location history to enable future interactions *Who uses physical space/ has routines like me?* Social Net
Place-Centered	Use of Physical Spaces by People	Provides online representation of user's current use of physical spaces. *Who is in this place now?* Active Badge – LOOK ActiveMap, ActiveCampus Maps	Provides history of people's use of a particular space *How much do people use this place?* FolkMusic (Location-based music history)
	Interactions in Matching Virtual Places	Provides synchronous online interactions spaces related to physical location *Who can I talk to in this place?* *What are people here now thinking?* ActiveCampus Map messaging	Provides asynchronous online interactions related to physical location *What did people have to say about things that happen here?* GeoNotes, E-Graffiti, ActiveCampus Graffiti

Figure 2-39 The P3-Systems Framework (Jones et al., 2004)

Working in the area of CSCW Jones et al (2004) produced their conceptual framework, figure 2-39 page 2-70, for location-aware community systems in response to two questions: what type of information do people want to know about a place and how do place types influence people's desire for place-related awareness of and communication with others? They concluded that location-aware systems "must integrate information about places with data about people's personal routines and social relationships" (Jones et al 2004, p202), in other words, what they are doing and who they are with play a key role in their communication and information needs in particular whether they need stable or dynamic information. Although not closely related to the development of cultural heritage apps the importance of context, situation and place are addressed in this model and relevant to the location-based elements of this study and will be considered in the development of the theoretical design frameworks.

2.5.2 Key design themes for interpretation and engagement

Key themes emerging from the literature relating to design themes for interpretation and engagement are now discussed.

2.5.2.1 Authenticity and materiality

Debate about object authenticity is prevalent throughout the literature on museum studies. The materiality of an object and the unique ability this has to communicate meaning in the visitor is widely understood (Dudley, 2010; Petrelli et al., 2013). The importance of being able to access the real thing and, where possible, handle objects is recognised as a powerful contribution to creating understanding and connection (Pye, 2008). In recent years the introduction of digital recreations of objects has raised question and concern about the value of the digital (Parry, 2007) and it is argued that materiality and authenticity cannot be transferred from the original article to the digital replicant: looking at a photograph of a Van Gogh painting is not the same as looking at it directly. Emotion, affect and sensation, essential parts of experiencing heritage, are potentially lost or diminished when we do not have access to the real or original. The alternative view point is that the digitally produced product is a material object in its own right (Witcomb, 2007) and that digitally created 'historical' objects can provide new

understandings, having their own value and presence and are capable of creating affect and experience specific to them (Cameron, 2007). Taking this argument further Flynn (2007) suggests that one of the biggest disappointments of virtual heritage, is that whilst heritage created through digital media (such as augmented reality, virtual reality or 3D printing) is algorithmically accurate (3D models are hallmarks of authenticity) there is an element of reduction such that the original object is defined primarily and in some cases only by its physical properties. Evoking the presence of the past cannot be achieved simply through representation of the physical attributes; it also requires cultural and social constructs. This concept is explored further in section 2.5.2.1. More recent developments in areas such as haptic augmented reality have enabled new forms of visitor experience, for example: allowing people to make sense of objects, which cannot be touched, by simulating the activity of touching. An illustration of this is a project involving National Museums Scotland and a Lewis chess piece where, through use of the Pepper's Ghost illusion, visitor are able to touch a replica of the chess piece whilst looking at the original object (Dima et al., 2014).

Digital interpretation should represent the source heritage accurately and authentically, however designers and curators should not be so consumed with exactness that the digital representation of the object loses the 'aura' or the essence of the original. Digital technologies have the capacity to create, capture and represent heritage in multi-modal and multi-dimensional ways and well designed interpretive digital media should exploit this potential.

2.5.2.2 Gamification - challenge and reward

Adding game elements to everyday life will make people more engaged, happier and more successful (McGonigal, 2011). There is clear evidence throughout the literature that gaming and edutainment has immense potential to not only attract new and younger audiences (Doran et al., 2012) but to create exciting, interesting and immersive connections with cultural heritage. Digital products are well placed to facilitate the use of games and the introduction of a digital layer to interpretive products can be used to achieve this (Doran et al., 2012). Digital games can range from simple one player quizzes

to highly complex multi-player, multimedia augmented reality with real world missions and location based activities such as geo-caching. Games offer challenge, reward fantasy and adventure encouraging curiosity and interest which in turn can deepen engagement enabling people to make stronger connections with the landscape and with artefacts (Malone, 1980; de Sousa et al., 2008; HLF, 2013; McGonigal, 2011; Bellotti et al., 2012; Rubino et al., 2015).

Delivering content and providing access to artefacts and objects in a way which is seen as fun can be highly motivational for the learner; the educational value of games is well recognised across many fields of learning (Malone, 1980). The potential to create virtual worlds, simulate situations and deliver important messages has given rise to the concept of serious games; evidenced by the use of products within industry and military to train people in dangerous or rare situations (Bellotti et al., 2012). The simulated immersive environment creates opportunities for contextual involvement, situated cognition, a rich learning experience and the construction of personal narrative (Huizenga, 2007; Antoniou, 2013; Coenen, 2013). Serious games which exploit the latest simulation and visualisation techniques to contextualise player experience in a stimulating and realistic environment are well placed to contribute to the interpretation of cultural heritage, particularly external locations and where the historical evidence is missing or limited. Games, especially those on a digital platform, provide opportunities for individuals to participate and groups to share. Simple opportunities to share and contribute can be through things such as liking or posting comments and photos. Massive Multiple On-line Games (MMOGs), for example Ingress (Stark, 2015) and, more recently Pokémon Go, facilitate this on a grand scale not only allowing individuals to participate and curate the heritage themselves (Ingress) but also promoting a community focus with team based activities which enhance the experience of the real world.

Huizenga et al (2007) found that their mobile city game, *Frequency 1550*, enabled school pupils to playfully acquire historical knowledge about the medieval city of Amsterdam and had good potential to meet Gee's (2005) pedagogy principles and practices for

digital game based learning (see table 2-3 page 2-74), particularly in relation to the empowerment of learners.

	Principles	Description
Empowered learners	Co-design	Learners feel like active agents (producers) and not just passive recipients (consumers). Players should feel a real sense of agency and control as they are the ones who make things happen.
	Customize	Different styles of learning work better for different learners. Learners have to be able to make decisions about how their learning will work, but should be encouraged to try new styles as well.
	Identity	Learners take on a new identity they value and in which they become heavily invested. Players either inherit a strongly formed and appealing character or they get to build a character from the ground up.
	Distributed knowledge	Learners feel expanded and empowered when they can manipulate powerful tools in intricate ways that extend their area of effectiveness.
Problem solving	Well-order problems	The problems learners face early should be well designed to lead them to hypotheses that work well, not just on these problems, but as aspects of the solutions of later, harder problems, as well.
	Pleasantly frustrating	Learning works best when new challenges are pleasantly frustrating in the sense of being felt by learners to be at the outer edge of, but within, their range of competence. That is, these challenges feel hard, but 'doable'.
	Cycles of expertise	Good pacing in learning is constituted through cycles of extended practice, tests of mastery of that practice, then a new challenge, and the new extended practice.
	Information on demand and just-in-time	Learners use information best when it is given 'just-in-time' (when they can put it to use) and 'on demand' (when they feel they need it).
	Fish tanks	When confronted with complex problems, letting the learner see some of the basic variables and how they interact can be a good way into confronting more complex versions of the system later on.
	Sandboxes	If learners are put into a situation that feels like the real thing, but with risks and dangers greatly mitigated, they can learn well and still feel a sense of authenticity and accomplishment.
	Skills as strategies	Learners learn and practice skills best when they see a set of related skills as a strategy to accomplish goals they want to accomplish.
Understanding	System thinking	Any learning experience is enhanced when we understand how it fits into a larger meaningful whole.
	Meaning as action image	Most learners do learn through experiences they have had and imaginative reconstructions of experience.

Table 2-3 Game Based Learning adapted by Huizenga (2007) from Gee (2005)

As a caveat Doran reminds us that for a truly cohesive experience games must connect with the heritage/museum artefact, and Bellotti discusses the challenge that virtual worlds are costly to create and limited in their reuse. However, elements of games and edutainment offer significant value in the design of interpretive digital media and are therefore pertinent to this study.

2.5.2.3 Sound

Mobile phones are audio devices and the inclusion of sound in digital products for smart phone apps is an important consideration for designers. Sound has the potential to make a unique contribution to the effectiveness of interpretative digital media because it works in a different way to visual media and can provide an alternate experience.

> "Once you start thinking about mapping sounds to events in the interface, you're in the business of conveying different kinds of information than you would visually" (Gaver in Moggridge, 2007, p. 577).

Gaver further argues that sound has a specific role to play in communicating emotional qualities rich with connotations. Examination of the literature on the use of sound in interactive media confirms this view with examples of sound increasing emotional connection, supporting situated action and deepening engagement with locations by providing an enriched experience.

Audio-Augmented Reality (AAR) is described by Vazquez-Alvarez et al (2015) is the action of superimposing virtual sound sources upon real-world objects enabling users to explore an acoustic virtual environment by augmenting a real life physical space. The act of walking through the location enables the visitor to curate for themselves an audio experience which enhances the place. Sonic Interaction Design (SID) describes the practice and inquiry into any of the roles that sound might play in the interaction loop between users and artefacts or the environment (Rocchesso et al., 2008). Two specific sound features relevant to the design of interpretive digital media are *Earcons*, a structured non-verbal audio message which uses abstract mapping to inform the user of something, for example the use of a horn to announce that you have arrived at a new location and *Auditory Icons* which can be used to augment a situation or the environment by producing a familiar sound which maps on the event and is clearly related to it, such as the sound of running water to represent a river. (Vazquez-Alvarez et al., 2012).

Sound offers location-aware mobile media an alternative way of navigating the landscape: instead of looking at maps and using visual media to ascertain location sound

enables to visitor to place themselves without the distraction of looking at screens for confirmation.

> "Putting sound centre stage allows us to focus on the materiality and embodied actions entailed using location based media in urban spaces. This approach moves away from a focus on devices and applications towards situated activity" Behrendt 2012, p. 283).

Sound is a sensual perception and differs from the more tangible visual media by being transient. Vision focusses us on what is in front of us, but sound surrounds us and is immersive: "sound situates man in the middle of actuality and in simultaneity, whereas vision situates man in front of things and in sequentiality" (Ong 2000, p.128 in Behrendt 2012, p288). The *Savannah Project* (Facer et al. 2004) used *placed sound* and mobile technology to develop children's conceptual understanding of animal behaviour. Using a Global Positioning System (GPS) and Personal Digital Assistants (PDA) the children were able to 'see', 'hear' and even 'smell' the world of the Savannah as they navigated a real outdoor space. The sound element was found to be instrumental in helping the children feel that they were actually in the Savannah.

Sound has been successful in encouraging non-linear exploratory behaviour, encouraging a sense of discovery, serendipity and wonder (Vazquez-Alvarez et al., 2015). *National Mall* is an example of smart phone application with locative sound which allowed users to hear different music, 'placed' by musicians in specific locations around a park stretching from the Capitol Building to the Lincoln Memorial in Washington DC. Visitors 'chose their own adventure' by walking their selected route through the park effectively allowing them to mix their own sound track as they walk (Behrendt, 2012). Vibration alerts and other non-visual feedback used as part of a *Serendipitous City Guide* around Glasgow permitted visitors to maintain their preference for keeping their phones in their pockets; freeing them to look and interact more with their surroundings (Hornecker et al., 2011; Vazquez-Alvarez et al., 2015).

Sound provides opportunity to include dramatization and character narrative. Various case studies have reported success in this area including *Riot 1831*, an app which used sound effects and script files based on real life events to recreate the 1831 riots and

augment them with locations in Bristol (Reid, 2005) and the *Westwood Experience* which used dramas and character to create a linear narrative for a guided tour of Westwood (Wither et al. 2010). Sound tracks of music can dramatically shape the visitor experience as proven by an in-the-wild project which used a mobile musical soundtrack to support visitors' exploration of the Yorkshire Sculpture Park. Hazzard et al (2015) found that their project created an enhanced emotional experience with increased focus on the sculptures. To some extent the music achieved this by masking out external distractions. Music which was considered, by the visitor, to be particularly relevant to the experience enabled greater connection between the visitor and the object; albeit that this was more by happenstance than design or intention. One example of this was a xylophone playing a repeated pattern which coincided with the visitor looking at rippling reflections in water.

Issues to consider when including sound in the design of interpretive digital media include authenticity, placement and technical barriers. Fitzgerald (2013) found that visitors were less forgiving of an accent which was felt to be unauthentic and subsequently inappropriate, because it was foreign, in a recorded version of a tour than they were of the same person delivering the same tour in real life. Likewise something being said by a woman which should have been said by a man was felt to be inaccurate and consequently distracting. Visitors using the recorded versions of the tour also commented that the voices sounded bored and they were less engaged as a result. These comments were not made when the same person gave the tour in real life as they were able to spontaneously respond to the audience. Technical issues particularly regarding the GPS were also noted with people receiving the stories at slightly different times resulting in some members of the group disconnecting themselves from the rest of group. The placing of sound and spatialized audio needs careful consideration for example, the *Westwood Experience* project reported that some members of their audience found the inclusion of six recorded character voices in a small room caused anxiety among some of the visitors (Wither, 2010).

2.5.2.4 Adaptable – customise and personalise

The importance of being able to personalise and adapt digital media to suit the needs and preferences of the user are well documented within the literature (HLF, 2012; Ardissono, 2012) and examples of the success in this in practice provide clear recommendations on the need for digital products to provide and support this. Personalisation is provided in a range of different formats, from navigational choice and freedom to explore as illustrated by *National Mall* (Behrendt, 2012), the Yorkshire Sculpture Park (Hazzard et al., 2015), *Wander Anywhere* (Bedwell et al., 2015), and *The Sound Garden* (Vazquez-Alvarez et al., 2015) to options in the way a visitor might access content and the use of multi-media to support individual visitor modes of learning (Maye et al., 2014). Digital media is not restricted to linear narrative or one dimensional modes of engagement and is capable of supporting multiple interpretation and allowing visitors to curate their own experiences. Content can be layered to allow visitors to choose how much they access and when they access it (Reynolds et al., 2010; Wallace, 2013) and further exploration of content post visit can be facilitated through follow up internet based activities including social media.

2.5.2.5 Collaboration, interaction, contribution and participation

The importance of social interaction, collaboration, participation and contribution to the effectiveness of visitor engagement has been explored in sections 2.2 and 2.4 above. Digital media can open up diverse forms of interaction (Ardito, 2010; Maye et al., 2014). Successful examples of this include digital media which has encouraged collaboration and family learning (HLF, 2011). Some mobile phone apps, such as *Sotto Voice* (Aoki et al., 2002) and *May 18th National Cemetery of Gwangju* (Suh et al., 2011), have been specifically designed to overcome potential isolation issues by actively encouraging visitors to 'eavesdrop' on each other. Crowd sourcing has been used successfully to enrich visits to cultural heritage and enhance the learning of "new co-shared and combined information regarding cultural monuments" (Kefalidou et al., 2014). However, some studies have reported that sharing content is one of the least used functions (Wallace, 2013); participative activities such as tagging an object might be limited to a

small proportion of visitors (Berstein, 2014) and user generated content might be less trusted than the 'official' content authored by curators (Han, 2014).

2.5.2.6 'In the Wild'

Learning 'in-the-wild' describes location based learning activities which are typically delivered outside and on the move. The specific challenges and outcomes of learning in-the-wild (mobile learning) differ from those associated with formal classroom or informal museum based learning. Being 'on-location' and 'on the move' adds a contextual level to the learning process which needs to be addressed in the design of products, and a requirement for the learning to become location-sensitive (Brown, 2010).

Activities such as geocaching can provide 'intentional' learning opportunities (Clough, 2010) and the use of smart phones to contextualise teaching has been explored (Tangney et al., 2010; Wijers and Jonker, 2010). Land and Zimmerman's work on using mobile technologies to support families' and children's outdoor learning experiences (2015) found that, when supported by a naturalist, images, text and photo capture tools encouraged visitors to engage with their natural setting emphasising the importance of the socio-technical elements in enabled learners to connect their science knowledge to authentic natural settings.

Vavoula and Sharples (2009) identify six challenges in evaluating mobile learning, figure 2-40 page 2-80. To address these challenges they propose a 3-Level Evaluation Framework: *micro level*/usability (the individual activities of the user and the usability of the product); *meso level*/educational effectiveness (the learning experience as a whole, how well has this experience integrated with other activities); and *macro level*/institutional adoption (the impact of the new technology on established educational and learning practices).

Being on location and outside requires products that can deal with practical issues such as the weather, the ease of carrying and the ease of use. Priestnall et al. (2010) recommended that devices should be simple in design, easy to use and rugged enough

to deal with the demands of being outdoors. Screens should be large enough to be seen and visible. Content should be rich and relevant.

Vavoula and Sharples (2009) Challenges in Evaluating Mobile Learning

1. Capturing and analysing learning in context and across contexts
2. "Has anyone learned anything?" - measuring mobile learning processes and outcomes
3. "An Ethical Question" - respecting learner/participant privacy
4. 'Let's not forget the technology" - assessing mobile technology utility and usability
5. "Seeing the bigger picture" - considering the wider organisational and socio-cultural context of learning
6. "Formal or informal?" - assessing in/formality

Figure 2-40 Evaluating Mobile Learning (Vavoula and Sharples, 2009)

2.5.2.7 Immersion, emotion, curiosity and connection

The importance of immersion, emotion, curiosity and connection in creating an engaging experience has been highlighted in section 2.4. The potential for digital media to achieve these objectives can be found within the literature. Mobile games and smart phone apps have been reported as successfully creating curiosity and interest, for example, *SciMyst* a mobile game in which the player explores physical environment to solve problems (Sedano et al., 2007) and *REXplorer*, a pervasive mobile game for tourists to explore the culture and history of the German town of Regensburg (Ballagas et al., 2007). Vazquez-Alvarez et al. (2015) found levels of immersion experienced by visitors using their *Sound Garden* app to explore the municipal gardens in Funchal, Madeira related to instances of stopping and scanning their environment supporting a sense of discovery.

Virtual worlds, such as second-life, can provide immersive experience and have a particular contribution to make in relation to exploration (de Freitas and Neumann, 2009).

> "the use of virtual worlds, with text-based, voice-based and a feeling of 'presence' naturally is allowing for more complex social interactions and designed learning experiences and roles plays, as well as encouraging learner empowerment through increased interactivity" (de Freitas et al. 2010, p69).

'Presence' is achieved through total immersion, however barriers to this are a low levels of empathy from the user and/or a lack of appropriate atmosphere created by the experience (Brown, 2004). Plot, stories and character are effective ways of generating atmosphere and connection, for example the use of authentic historical characters to describe being part of the riots in "*Riot" 1831* (Reid et al., 2005), emotive reactions to the speaking characters in *Viking Ghost Hunt* (Carrigy et al., 2010) and the use of storytelling in the *Westwood Experience* (Wither et al., 2010), although in this latter case the character of the mayor was not considered strong enough to fully engage the audience. It is also worth noting the dangers of becoming immersed to the point of presence as this might place users in positions of personal danger if they are so engrossed in the experience they have become unaware of their surroundings (Ardito et al., 2008; Fitzgerald et al., 2013 and Vavoula et al., 2015).

2.5.2.8 Place centred design

> "When designing everything from the narrative to the way it is presented, and the way people go through the experience it is critical to keep the location in the loop and design for it rather than round it" (Wither et al 2010, p46)

The focus of this study is on places which are not solely identifiable as a heritage sites but which have multiple and varied meanings and purposes for the people who visit and use these locations. Neither Victoria Park in Leicester (the subject of the final case study in this thesis) nor the Cultural Quarter in Leicester (the subject of the preliminary studies in this thesis) are obviously recognised as discrete tourist or visitor destinations and the people who inhabit and pass through these areas will have numerous associations and relationships with these places beyond the historical and cultural. Specific historical and cultural venues, such as Leicester Cathedral or the site of Richard III's burial, have a more clearly defined purpose and meaning, making it more likely that visitors will have a shared and identifiable set of needs and expectations. Designers of digital media to engage the visitor and enrich their interpretation and experience of these locations often use a *'user-centric'* approach as they are able to identify and anticipate what the typical visitor will want, however, this is not so easily applied to the places featured in this study as the designer cannot be sure of each visitor's motivation for being in this

particular location. Messeter (2009) proposes *'place-specific computing'* as a genre of interaction design: an approach in which place is "foregrounded…as a primary concept for understanding the contextual conditions that shape digitally mediated interactions between people and place-specific resources" (Messeter 2009, p40). Where it is difficult to articulate specific needs of specific users and it is easier to consider the aspects and identify of the place, then a '*place-centric'* approach to design may be more beneficial than a '*user-centric'* approach. To explore this concept more fully the features of 'place' will be described.

Human geographer Tuan (1977) describes humans as having an intimate experience with place. People personalise and 'own' their spaces, describing locations as 'my office' and turning their houses into homes, places of sanctuary and care. As human beings we have a personal association with a place, moreover a "place is a pause in movement" (Tuan, 1977, p138), it is somewhere people stop to fulfil a biological need, it becomes a centre for which a human being will feel value. In the field of ubiquitous computing, that is, technologies which allow systems to focus on who the user is, and when and where they are acting, Dourish (2001) asserts that design should be focussed on place and not space, since place is socially meaningful. Writing in the area of CSCW Harrison and Dourish (1996) describe a place as a space with something added. The 'something added' is the social meaning and convention associated with the space by those using it. Space is transformed into a place through shared cultural understanding and usage. They further argue that designers of technological interventions into spaces should be mindful of the behaviours which are used by the group or groups using these spaces, as it is these, not the physical location, which frame the place and the meaning of that place. "Space is the opportunity: place is the understood reality." (Harrison and Dourish, 1996, p67).

Understanding the difference between place and space is an important element of designing for place. This study is following the premise that space is the physical concept of a site or location and place is determined by the ways in which people use and interact with that space. Space is defined by physical characteristics, and can be identified by

such things as co-ordinates on a map, buildings, landmarks and other such infrastructure. Place however is defined by how people use and behave within the space, which is shaped by their shared cultural and social meaning of that space. A space is singular and absolute, but the place, the meaning and usage it has for people, can be multiple and temporal. Consider the example of a school. The space: the location, the buildings and the rooms remain, on a day to day basis, the same, yet the purpose and meaning of that place will alter according usage and association. For pupils and teachers this is place of learning, for the community church who hire the venue on a Sunday it is a place of worship, for the parent-teacher association who organise the Summer Fete and the Annual Concert it is a place of social gatherings and for those who visit occasionally to cast their vote in local and national elections it is a place of civic administration. For each group this is the same space, but a different place.

Designing place specific computing requires understanding the identity of the place (Messeter, 2009). It is important to build a rich picture of 'place' not just the physicality but the ways in which people encounter it and the stories people have to tell. This addresses concerns discussed earlier regarding the reduction of objects to their physicality at the expense of their materiality (Flynn, 2007). Relph (1976) describes a sense of place as being about physical properties, meanings, and activities. Tuan (1977) talks of *topophilia*, a term he uses to refer to the affective bond between people and places emphasising the sense of attachment. Drawing on Tuan Messeter (2009) describes four dimensions of place: physical; personal; social; and cultural. Building on Tuan's sense of attachment Cresswell (2015) describes place is a meaningful location – spaces to which people have attached meaning. Cresswell describes three levels of identification for place: the descriptive level; the social construct; and the phenomenological approach – how it is experienced.

Important for this study is the connection between place and memory which Creswell describes a being inevitably intertwined. Heritage zones are examples of the placing of memory.

> "The very materiality of a place means that memory is not abandoned to the vagaries of mental processes and is instead inscribed in the landscape as a public memory" (Cresswell 2015, p120).

Place then becomes an effective tool in the production and reproduction of memory, a concept which has particular resonance for this study,

> "it is one thing to read about the past in a book, or see it displayed as a painting – it is quite another to enter the realm of history-in-place…the ability of a place to make the past come to life in the present thus contributing to the production and reproduction of social memory" (p.121).

Place centred computing can be used on forgotten/non-places to make keep information alive and reinvigorate our understanding and association with the heritage associated with a location. The importance of understanding fully the identify of a location in terms of all four of Tuan's descriptors physical, personal, social and cultural should be addressed by curators and designers and they should avoid the trap of delivering interpretive products which allow for different meanings, for example places like Ayres Rock and Stonehenge have different cultural meanings today than they had in the past, as Tuan argues:

> "most monuments cannot survive the decay of their cultural mix. The more specific and representational the object the less likely to survive: since the end of the British imperialism in Egypt the statues of Queen Victoria no longer command worlds but merely stand in the way of traffic" (Tuan 1977, p.164).

Place identity is a complex composite which designers will need to unravel if they are to accurately represent the place and engage the visitor.

2.5.3 Interpretive digital media – case studies

A range of interpretive digital media products and research projects were reviewed to identify lessons learned and establish areas for further research and study. Several of these products have already been discussed in this chapter and a full account of each of the items reviewed is in Appendix 2A. A summary of the products and their relevance to this investigation is provided in table 2-4 pp 2-85 to 2-87.

Study/ Product	Overview	Key findings	Value for this Study
Cyberguide Abowd et al. 1997	Prototypes of mobile context aware tour guide.	Proof of concept regarding the value of context aware technology.	Confirms that **location based** device is of value
GUIDE Cherverst et al. 2000	Hand-held context aware tourist guide for the city of Lancaster.	An early example of affordance – visitors would trust a computer to guide them round the city.	Confirms that visitors will **use computer based/hand held device to explore** and interpret a location
Archeoguide Vlahkis et al. 2001	Personalised augmented reality tours of Olympia.	Enthusiastic uptake from young visitors. *Difficult to view in direct sunlight, size and weight of device an obstacle to use, limited number of points of interest.*	Highlights practical **difficulties regarding using technology outside**. Perhaps a little old to pay too much attention to the comments on younger people being the most enthusiastic users
The Savannah Project Facer et al. 2004	GPS and PDAs creating a game environment for children to explore the Savannah.	Locative sound, students highly engaged, evocative sound effects. *Technical issues broke the flow of the experience.*	Confirms the use of **sound in creating atmosphere** and **immersion**. Also confirms the **negative impact of technical difficulties**
"Riot" 1831 Reid et al. 2005	Location based virtual reality audio drama re-imagining the 1831 riots in Bristol.	Immersive, fun, locative sound effects, relevance and authenticity of location, hands free device, use of authentic character. *Insufficient historical detail, lack of visual hooks.*	Confirms the contribution of **character**, **sound effects**, **authenticity of location**, authentic and **sufficient historical** detail and the need for the device to be **hands free.**
"The Voices of Oakland" Dow et al. 2005	Mobile audio tour of Oakland Cemetery, Atlanta.	Linear storyline gives visitor a framework for the visit.	Introduces the relevance of a **linear story line to provide a pathway** for the visitor
"Frequency 1500" Huizenga et al. 2007	A mobile city game for school children delivering historical knowledge regarding medieval Amsterdam.	Children highly motivated to play and learn, an increased focus on tasks. *Technical problems initially demotivated pupils.*	Further confirmation of the need to **eliminate technical problems**. Confirms the motivational impact of games and play
REXplore Ballagas et al. 2007	Mobile pervasive spell casting game for tourists to explore Regensburg, Germany.	Non-linear game allowing user freedom and choice, playfully engaging, historical accuracy, professional voicing of characters, story and character creating atmosphere. *Obligation to look at screen detracted from looking at surroundings, over immersion, insufficient information, loudspeaker broadcasting sound might disturb others*	Identifies the **dangers of being too absorbed** in terms of safety. Highlights the **distracting nature** of being over immersed. Confirms the need for **sufficient information** and the value of **play, character, story, user choice** and freedom

Study/ Product	Overview	Key findings	Value for this Study
"Explore!" Ardito et al. 2008	Virtual reality mobile phone game based exploration of archaeological ruins of Egnathia, Italy.	*Poor cell reception in rural areas*	Technical issue regarding **signal reception**
"Viking Ghost Hunt" Carrigy et al. 2010	Location based mobile app game based in Viking Dublin.	Headphones helped user to engage with experience, historical relevance of location, emotive reaction to speaking characters. *GPS and usability issues negatively impacted on game play.*	Confirms the value of the **speaking character**. Also confirms the need for **usability** and **adequate GPS**
"The Westwood Experience" Wither et al. 2010	A location based mobile phone app using mixed reality to connect participants to real locations.	Proximity and authenticity of location, use of linear storytelling, powerful mixed reality. *Under developed character insufficient to engage the visitor, chunking the story inhibited flow of experience, inappropriate or inaccurate links, and unnecessary content*	Useful advice on the use of **characters** and the need for these to be strong and well written. Confirmation that **information should be accurate and proximate**. Another example of a **linear story providing framework** and navigation.
"Time Warp" Blum 2012; Herbst 2008	Mobile outdoor mixed reality game exploring historical city of Cologne.	Use of virtual character to accompany (in later version). *Bright sunshine caused problem with screen, unrealistic images of objects.*	Confirms the use of **character**. Highlights problems relating to bright sunshine.
"Virtual Excavator" McGookin et al. 2012	Interpretive, exploratory guide for visitors to Bar Hill fort, an un-stewarded site.	Audio augmented reality can be used to provide interesting visits to un-stewarded archaeological sites. *People were less popular than the 'finds' (unless they were being found), navigation was largely limited to the visible remains*	Emphasises the importance of **sound**. Provides comparative case study of **un-stewarded site**. Having a **task** to do was engaging.
"Holkenkollen Time Travel" Orkelbog. 2012	I-pad app allowing user to experience four different versions of the mountain through time.	Place-centered design.	The emphasis on both **place centered** as well as user-centered design very valuable for the development of interpretation of **un-stewarded external sites.**
"Reminisce" Ciofi and McLoughlin 2012	Interactive digital installation at Bunratty Folk Park, Ireland.	User contributions support deeper connection, facilitation of future engagement through website.	The value of **user contribution** and **extending engagement** through future connection via the website

Study/ Product	Overview	Key findings	Value for this Study
Hidden Stories Fitzgerald et al. 2013	Mobile story telling guide, Nottingham city and Castle.	Being on location added value and a sense of occasion. *Regional accents need to be authentic, concerns about being mugged for phone, audio technology more isolating than personal guided tour*	The value of **being on location**. The need for accents and **character to be authentic**.
Leicester Castle App Vavoula et al. 2015	Story telling apps using beacons and locative media to present the history of Leicester Castle.	Positive perception of learning and enjoyment in a heritage context. *Concerns over mobile device requiring attention at the expense of the site.*	Confirms the need to ensure **attention is directed to the heritage** and not focussed on the app.
The Sound Garden Vazquez-Alvarez et al. 2015	Discovery experience based in Municipal gardens, Funchal, Madeira, delivered through sound.	Levels of immersion can be related to increased instances of stopping and scanning the environment, sense of discover.	Confirms the value of getting visitors to **stop and look** at something and the use of **trajectories** to achieve this
Musical Sound Track Hazzard et al. 2015	A mobile adaptive musical sound track to enhance the experience of visitors to the Yorkshire Sculpture Park.	Sound dramatically shapes the visitor experience. Music encouraged longer and deeper engagement	The value of encouraging the visitor to spend some time – to **dwell at a location**.

Table 2-4 Case studies (Wilkinson, 2017)

2.5.4 Summary of findings - digital design

The principles and practices of good digital design are well rehearsed in the literature and there is substantial evidence that interpretive digital media products should be designed to be intuitive to use, physically durable and with technology that functions accurately and effectively. Digital media has the capacity to draw on a range of disciplines, such as game design theory, human computer interaction and mobile learning and has the potential to deliver products which combine elements such as 'immersion', 'flow', 'challenge', 'discover', 'collaboration' and 'participation' subsequently providing interpretive solutions which are uniquely capable of enhancing and enriching visitor engagement.

A number of challenges have been identified in the literature regarding the ability of digital media projects to achieve this potential and several key areas for improvement can be identified, for example in the ability of the products to provide satisfying levels

of information, the difficulties of maintaining appropriate connection with the location, the challenge of retaining authenticity and materiality and the importance of focussing on the heritage rather than the technology. Further investigation is needed to discover if these challenges can be addressed within an engagement framework.

In the context of this study 'place-centred design' has particular relevance. Cultural heritage sites are places, not just locations. As a 'place' a cultural heritage site has a specific meaning and resonance for those who visit which is more than a set of co-ordinates on a map. 'Place', as opposed to 'space' and location, is an important concept which can be used to inform the design of the engagement framework proposed in this study. Whilst there is some detail about this in the literature, designing for place is a factor which requires further attention. This will discussed further in chapter five, section 5.2.3.2.

2.6 Limitations of previous research and gaps in knowledge

The literature has been reviewed to ascertain what is known regarding the visitor engagement relationship and several gaps in knowledge and understanding have been identified which are pertinent to this study. There is limited information on the motivations or behaviours of visitors to un-stewarded external heritage sites where the historical evidence is largely invisible and the curated interpretation is minimal. There is a gap in what is known about the depth of engagement of visitors to outdoor heritage using interpretive digital media and an absence of a model which fully encompasses all stages of engagement or all the behaviours associated with these stages. There is limited evidence that inclusion of design features to support the stages and behaviours associated with engagement have a positive impact on the visitor's ability to be engaged across the whole spectrum of the engagement process.

2.7 Summary

This chapter has presented the review of the literature, addressing the first research objective of this study by exploring the relationship between the cultural heritage location, the visitor and the interpretive digital media and establishing what is already

known in relation to the first four research questions outlined in section 1.3.3, page 1-13. Limitations of previous research and gaps in knowledge have been presented in 2.6 page 2-88.

3 Chapter Three: Methodology

3.1 Introduction

Chapter three describes and explains the methodology for this study.

Researcher activities for this study include: a documentary review of the literature and professional practice (chapter two); an examination of the challenges in designing, developing and implementing interpretive digital media products (chapter four); an evaluation of two cultural heritage mobile phone apps, with a particular focus on the impact of these apps on visitor engagement and emotional reaction (chapter four); the development of guidance and an engagement framework (chapter five); the design and development of a prototype product, using the guidance (chapter six) and the evaluation of the resulting prototype, and the guidance, through visitor field tests (chapter seven). As a consequence of these activities the research questions proposed in 1.3.3, page 1-13 can be addressed (chapter eight). Figure 3-1, page 3-91 provides an overview of the research framework for this study.

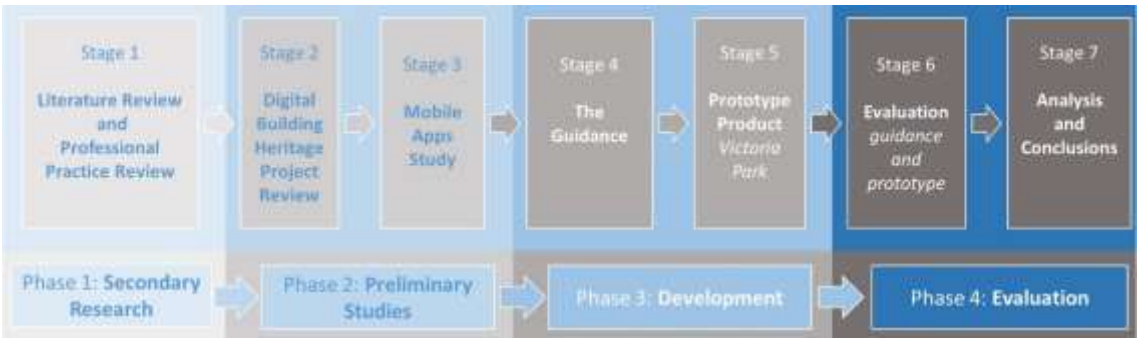


Figure 3-1 Research framework (Wilkinson, 2018)

3.2 Rationale

A mixed methods approach has been used throughout this study to examine the phenomena of rich engagement of visitors with outdoor, non-stewarded cultural heritage sites. A combination of quantitative and qualitative methods was considered to be the most effective way of answering the research questions, providing "complimentary compensation of the weaknesses and blind spots of each single method" (Flick, 2014 p.30). In line with Bryman's (1992) logic of triangulation and his

identified ways of integrating quantitative and qualitative research this study obtained data using both methods triangulating results to check for consistency, provide additional support for findings, form a rich contextual picture and emphasise the viewpoints of the participants. Quantitative data from questionnaires was used to provide initial statistical evidence and qualitative data from open questions on the questionnaires and interview data, from the same participants, allowed further exploration providing a richer context for the answers and an enhanced understanding of the phenomena being investigated.

The basic principles of grounded theory data analysis (Strauss and Corbin, 1998) guided this study although the approach taken by the researcher was less structured than that described by Strauss and Corbin, with an emphasis on understanding, rather than explanation. This approach is more in line with constructivist grounded theory as outlined by Charmaz (2006) which looks for multiple realities, pulling together experiences to show a range of meanings.

> "Grounded theory is a qualitative research design in which the inquirer generates a general explanation (a theory) of a process, and action, or an interaction, shaped by the views of a large number of participants" (Creswell, 2013, p83).

Grounded theory is a good methodology to use when a theory is not available to explain or understand a process: the literature may have models available but these models were developed and tested on samples and populations which are different to those being studied (Creswell, 2013). The literature and professional practice review for this study has identified several models for engagement but none which specifically address the use of interpretive digital media to create engagement with external, un-stewarded heritage sites with 'invisible' history, making this study appropriate for a grounded theory approach. To analyse the data in this study the researcher adopted a thematic analysis approach.

> "A method for identifying, analysing, and reporting patterns (themes) within the data. It minimally organises and describes your data set in (rich) detail. However, frequently it goes further than this, and interprets various aspects of the research topic" (Braun and Clarke, 2006, p79).

This strategy, which combines elements of narrative analysis, discourse analysis and grounded theory analysis, has the advantage of highlighting similarities and differences within the data set and can generate unanticipated insights. It is also flexible, and accessible to researchers with limited experience of qualitative research (Braun and Clarke, 2006 and 2013). The Mobile Apps study was more open ended: the researcher adopted an investigative approach with no preconceived notion as to how participants would conduct their visit to the heritage site. The Victoria Park study built on the knowledge gained from the Mobile Apps study, comparing results from each group and looking for differences in participant behaviour. Care was taken not to convert the qualitative data into quantitative data by measuring just the frequency with which things were mentioned but to interrogate codes to establish links and themes, similarities and differences in the data.

Guidance by Charmaz (2006), as described in Creswell (2013), and a 15 point checklist (Braun and Clarke, 2006) have been used by the researcher to assess the effectiveness of the qualitative research approach and the quality of research. Full details of this are in section 3.9 with results reported in chapter eight.

3.3 Research framework

A broad overview of research framework and each stage within this process is provided in figure 3-2 page 3-95.

3.3.1 Phase 1: secondary research (Stage 1)

A review of the academic literature and professional practice was undertaken to meet research objectives 1 and 2 of this study and address the first four research questions as described in section 1.3.3, page 1-13. A range of academic and professional practice resources including books, journals, academic papers, conference proceedings, professional practice guidelines, websites, practitioner blogs, newspaper articles, press reports, professional publications relating to museum visitors, cultural heritage, historical interpretation, human computer interaction, user centred design, place centred design, edutainment, learning styles, project management and engagement

were reviewed both at the beginning of the research process and on an ongoing basis until the creation of the guide. A number of cultural digital media products were reviewed in detail and are presented as case studies in chapter two. The purpose of the initial research was to provide the context and underpinning knowledge to inform the relationship between visitors, cultural heritage and digital interpretation, to confirm what was currently known regarding effective visitor engagement and to identify gaps in knowledge.

3.3.2 Phase 2: preliminary studies (Stages 2 and 3)

Two forms of primary study were undertaken to further examine the use of digital media to interpret cultural heritage and the visitor experience of using such products for this purpose: the Digital Building Heritage Project review and the Mobile Apps study. The Digital Building Heritage Project review provided opportunity to assess the impact of collaborative design and creation processes, with a particular focus on the requirements and experiences of the cultural heritage practitioner. The Mobile Apps study enabled the researcher to observe and evaluate the potential of two mobile phone apps to engage visitors, both cognitively and emotionally, with heritage locations where the tangible historical evidence and the interpretation of the site was absent or limited. Both studies afforded opportunities to further establish what constitutes 'rich' visitor engagement from both the heritage practitioner and visitor perspective. The research methodologies for both studies are described in chapter 4.

3.3.2.1 Stage 2: Digital Building Heritage Project review

A review was undertaken of the Digital Buildings Heritage Project: a collaborative venture between De Montfort University and cultural heritage groups which led to the co-creation of digital products for the interpretation of cultural heritage. This review evaluated the collaborative processes and legacy of the 11 digital projects with a particular focus on the benefits and challenges for heritage groups developing digital media products in a co-creation partnership. The results of this study were used to inform the guidance.

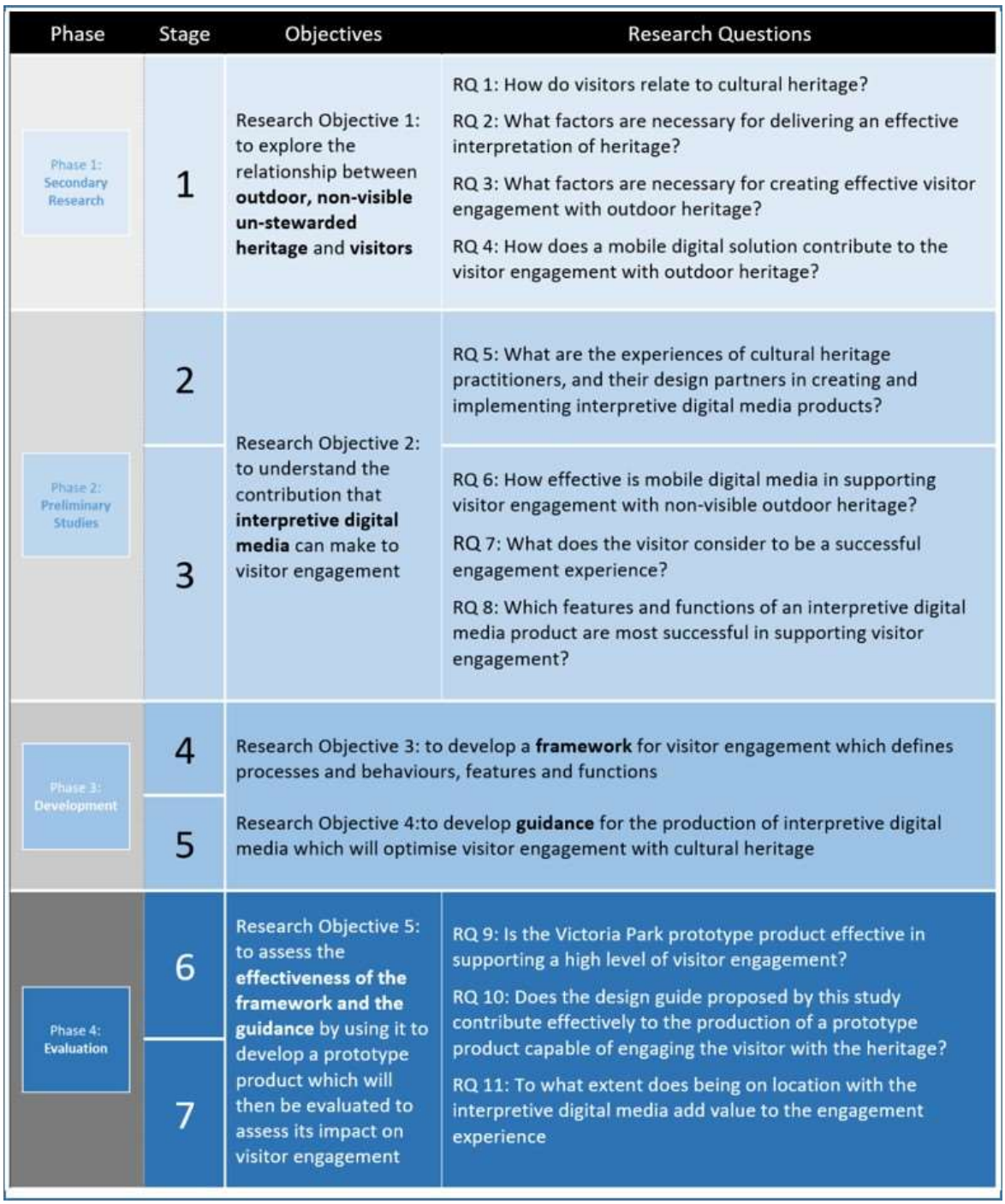


Figure 3-2 Research flowchart (Wilkinson, 2018)

3.3.2.2 Stage 3: Mobile App study

The researcher evaluated two mobile phone apps developed for the Cultural Quarter in Leicester. Both apps were designed with the proposed purpose of enabling visitors to explore and experience a de-industrialised area of the city. The aim of the study was to examine how visitors used the mobile phone apps, how they related to the technology

and how effective they felt the apps were in developing their engagement with the site in question. The results of this study were used to inform the development of the guidance and the framework.

3.3.3 Phase 3: development (Stages 4 and 5)

The development phase of the research included two stages: the creation of the design *guide* and engagement *framework* (stage 4) and the subsequent use of these to produce the prototype product which would

3.3.4 Phase 4: evaluation (Stages 6 and 7)

The final phase of the study was the evaluation of the guidance and the prototype product. Field study visits were conducted to assess the impact of the prototype on visitor engagement (stage 6). Results from these were analysed and used to address the research questions described in section 1.3.3 page 1-13 (stage 7).

3.4 Victoria Park evaluation

3.4.1 Aims and objectives

An evaluation of the prototype product was undertaken to assess the effectiveness of the guidance and the prototype in the achievement of visitor engagement. The aim of the Victoria Park study was to ascertain three things: the capacity for the prototype product to facilitate and support visitor engagement with the Park; the effectiveness of the guidance and the extent to which a location-based interpretation experience enhances visitor engagement with the heritage. The evaluation study explores research questions 9 to 11 as outlined in section 1.3.3, page 1-13 and section 7.1.1. page 7-323.

3.4.2 Participant selection

Two categories of park visitor were identified during the design of the prototype: the ‘loan regular commuter’ and the ‘occasional social/leisure and consequently participants of the evaluation study were selected as being representative of both these groups. Attention was also paid to gender balance and a broad representation of a range of ages.

3.4.3 Data collection

Quantitative and qualitative data were collected using a range of techniques including questionnaires, diagnostic tools and semi-structured interviews. Questions that were posed verbally to the participants during the post visit interviews required participants to demonstrate engagement states of empathy, understanding, connection and learning by asking them to imagine what going to the races would have been like. Participants were also asked their opinion on some of the controversial questions covered in the stories, in particular, would they have been for or against the races moving to the new race course in Oadby. These questions were used to examine whether or not participants had made a personal connection with the stories and the issues covered in the digital content. Qualitative data collected from the questionnaires and interviews was transcribed and coded following 'thematic analysis' principles (Braun and Clarke, 2006), see table 3-1 page 3-97. Qualitative data, including codes and themes were collated and analysed using a Microsoft Excel spreadsheet. Quantitive data collected from the questionnaires were collated and analysed using a Microsoft Excel spreadsheet. Codes were developed for each new idea and themes that were found to be conceptually similar in nature or related in meaning were grouped together as themes. These themes were used to test the *guide*.

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Table 3-1 Phases of thematic analysis (Braun and Clarke, 2006)

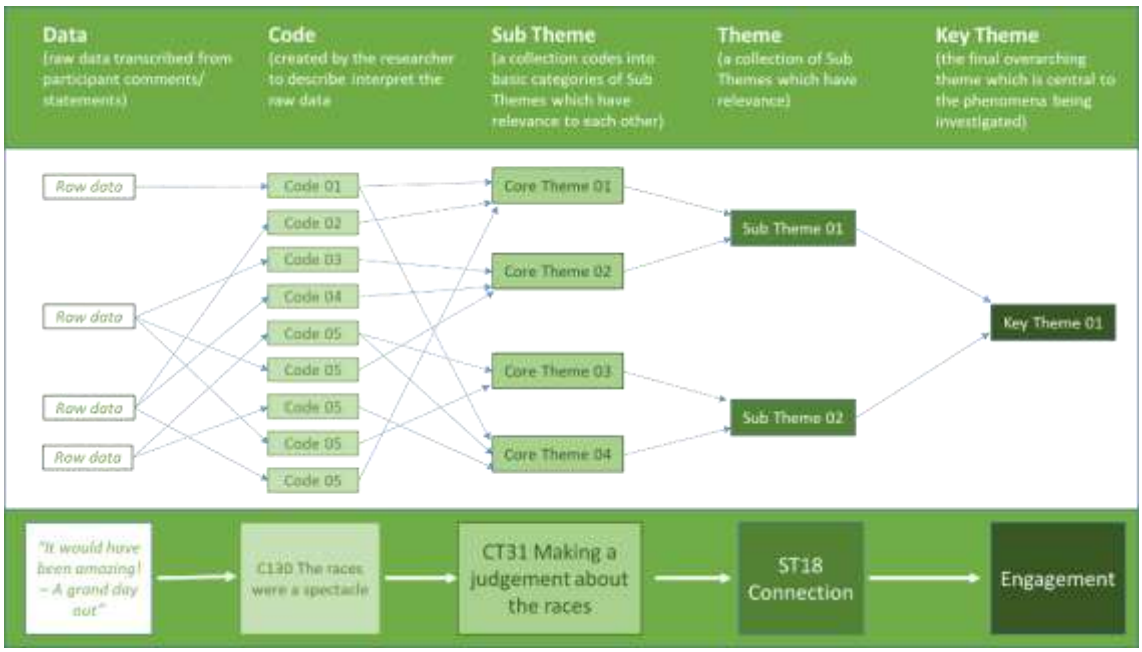


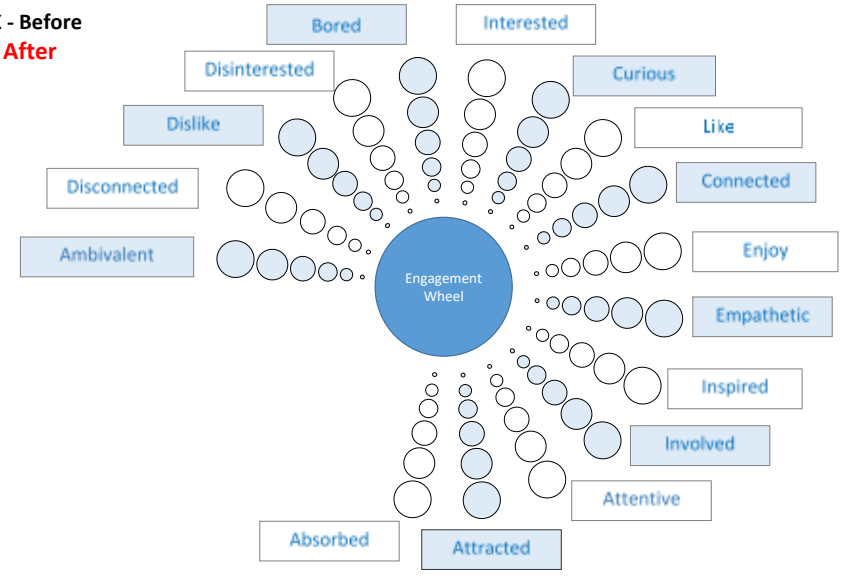
Figure 3-3 Victoria Park study coding framework (Wilkinson, 2018)

3.4.4 Study process

An overview of the standard operating procedure for each site visit is provided in figure 3-5, page 3-105. Details of all the Victoria Park study documents are in Appendix 3D.

SOP Step	Detail
1 Invite participants	Research participants were selected from two groups (those who participated in the Mobile Apps study and those who responded to the Visitor Interest Survey), and invited to take part in the evaluation of the prototype. Invitations were made directly to individual participants via email. Full details of the project, *D1: Research Participant Call*, were sent with the invitation. Having accepted the call participants were asked to take part in a site visit to Victoria Park to use the app. Participants will now be referred to as visitors.
2 Pre-visit meeting	Site visits were conducted with one to two visitors at a time and were accompanied by the researcher throughout. Prior to the site visit the researcher undertook steps 2.1- 2.5 with each visitor. A set of instructions, *D2 Researcher script*, was developed for use by the researcher as part of the pre-visit meeting.

2.1 Project information	Prior to the site visit visitor were provided with information about the visit in the form of *D3 Project Information*. The researcher explained the context and purpose of the study clearly outlining the areas of a particular importance to the overall research.
2.2 Consent form	Having read the *Project Information document* and had the opportunity to ask questions visitors, who agreed to take part in the study, completed *D4 Project Consent Form*.
2.3 Benchmarking	Prior to site visit visitors were asked to compete three benchmarking documents: a pre-visit questionnaire, the *Geneva Engagement Wheel* and the *Visitor Engagement Wheel* The *Pre Visit Questionnaire, D5*, is divided into two sections: grouping questions and baseline questions. Grouping questions allows visitor data to be assembled and compared within the following groups: frequency of visiting the park; familiarity of using mobile apps on location; personal interest in cultural heritage; age and gender. Benchmark questions are used to establish visitor attitude towards the park including its importance to the people of Leicester and what the park means to them personally. Visitors are also asked to indicate their initial level knowledge regarding landmarks which are local to Victoria Park and historical details pertaining to the nineteenth century Leicester horse races on the park. Visitors are asked to benchmark their emotional response to Victoria Park using the *Geneva Engagement Wheel, D6* and their current engagement with Victoria Park using the *Visitor Engagement Wheel, D7*. Use of these tools replicates a similar process used in the Mobile Apps study and allows for comparison of data across both projects.. Note that the *Visitor Engagement Wheel* figure 3-4 p 3-100, was modified for the Victoria Park study to reflect the engagement states of the *framework* hence the 'gap' in the wheel.

	BLACK - Before **RED - After**  *Figure 3-4 Visitor Engagement Wheel (Wilkinson, 2018)*
2.3 App demonstration	Prior to the site visit the researcher provided a short demonstration of the prototype ensuring that all visitors fully understood how to operate the product and were comfortable in doing so. Each visitor was encouraged to practise using the product. The prototype was developed and presented on an Apple i-pad mini tablet device. Each visitor was provided with an i-pad mini and had sole access to their own version of the prototype throughout the visit. Using the same hardware platform enabled this investigation to focus on the presentation of the content and the design of the prototype and prevented visitors from being distracted by differences which occur as a result of using a variety of platforms. The additional digital content used in the 'discover more' part of the prototype was presented on a different i-pad mini and was kept separate from the main product. The researcher made this available as and when the visitor requests to see more. The opportunity to access the additional digital content was explained as part of the demonstration, however, since this was an optional part of the visit it was deemed appropriate to keep it on a separate device to avoid confusion with the key elements provided by the main product. The researcher carried sufficient devices with the additional content to enable visitors to have their own version during the visit. At no point during the visit were visitors required to share devices unless they opted to do so.

2.4 Visit overview	The researcher provided the visitors with a full overview of the site visit prior to commencement explaining clearly the route that would be taken, the activities which they would be asked to do and the overall duration of the visit. Where necessary accommodation was made to allow for the visitor's ability to complete the full visit, for example one couple was driven to the nearest parking location to limit the amount of walking required in that particular visit. Visitors were shown a map of the site visit, *D8 Visit Guide*, and the route that would be taken though none actually carried this map or referred to it during the visit and the researcher operated as the route guide throughout each visit.
2.5 Watch timeline video	The final activity before the site visit was to watch the 'Timeline' video on the prototype. This video provides historical context for the races on the park with background information regarding the races prior to being moved to Victoria Park in 1805 and a brief account of the time when the races were on the park, up to their removal to Oadby in 1883. The timeline displays an overlay of original map images demonstrating how the park altered overtime from 1805 to present day, including the development and subsequent removal of the race course.
3 Site visit	The site visit involves walking the route of the nineteenth century race course and stopping at five different 'points of interest'. At each 'point of interest' visitors are asked to stop and use the features of prototype to explore the nineteenth century race course. Visitors were asked to perform each task in the same order, although they were given the option to spend as little or as long on each feature as they felt appropriate. Each visit followed the standard operating procedure steps outlined below, steps 3.1 to 3.6, repeating steps 3.2 to 3.6 until all 'points of interest' have been explored. The researcher provided guidance as to the route of the visit and any support required regarding usage of the prototype.
3.1 Walk to POI 1	The site visit starts once the visitor has arrived at the first 'point of interest'.
3.2 Listen to the	Each 'point of interest' has an 'attraction sound'. In a fully working version of the product this sound would be triggered by location-based technology and will play automatically as the visitor is within

'attraction sound'	the proximity of the 'point of interest', however this feature is not being explored as part of this study so the sound is activated by the visitor when they select the Interest Point Button. All 'point of interest' locations have been sited next to park benches and the visitor can sit if they wish to do so.
3.3 Read the Leicester Chronicle	The visitor reads the source article from the Leicester Chronicle associated with this 'point of interest'.
3.4 Watch the video	The visitor remains at the location and watches the animated version of the story associated with this 'point of interest'.
3.5 Listen to the story	When the visitor has watched the animated video and exhausted all the required further digital content the researcher indicates where the next 'point of interest' is. The visitor then listens to the narrated story associated with the current 'point of interest' whilst walking to the next. One of the design elements included was stories which could be listened to by visitors whilst they walked through the park. Walking to the next 'point of interest' whilst listening to the story not only allows for this concept to be tested but also allows for a more time-efficient site visit
3.6 Discover more…	The prototype provides further digital context which is layered, allowing for as little or as much information to be accessed by the visitor as they wish. Directly after the video the visitor is offered the opportunity, by the researcher, to view the additional digital content.
4 Post visit evaluation	Following the site visit the visitor group return to an indoor location to complete the final part of the study.
4.1 Post visit documentation	The *Post-Visit Questionnaire, D9,* is divided into four areas: design features; learning styles; engagement elements, stages of engagements and usability. A range of specified responses is used to allow for measurement and subsequent analysis of the extent to which using the app has provided a rich and engaging experience for the visitor. Specific design features including: the use of the real and authentic articles from the 19th century Leicester Chronicle; the

	proximity of the Interest Points to where things actually happened; the route of the visit mapping the course of the race course; the contextual information provided by the Race Course Timeline; the contextual information provided by the Landmark hotspots; the opportunity to discover more by accessing the associated digital content; the photographs and paintings of things which are now gone, such as the grandstand; stories re-told from the perspective of a fictional but authentic witness and the inclusion of authentic sounds which would have heard at the races such as galloping horses and the 'Meet me by Moonlight' song. Learning styles and communication preferences are explored through questions regarding the helpfulness of the following features: watching the videos; reading the Leicester Chronicle articles and listening to the stories. Engagement levels are assessed through measurement of knowledge acquisition regarding a range of items covered in the app, plus measures of understanding of Victoria Park, feeling about the park, enjoyment of the park, curiosity about the park, attraction to the park, connectedness to the park, emotional connection to the park, inspiration about the park, interest in the park and a desire to continue discovering more about the park. Stages of engagement were explored through questions regarding attraction, absorption, satisfaction and an inclination towards further visit or investigation of the park. Usability was measured through use of the SUS (Brooke, 1996). The visitor's original *Geneva Emotion Wheel* and *Visitor Engagement Wheel* are returned to them and they repeat the pre-visit exercise of indicating their level of emotion and engagement by again completing the wheel diagnostics. This data provides measure of movement in emotions and engagement for each visitor.
4.2 Post visit interview	The final part of the post-visit meeting is a semi-structured interview facilitated by the researcher with each of the visitors. The researcher used a prepared set of questions to facilitate the discussion, *D10 Victoria Park Study Post Visit Interview Questions*. The interview provides further opportunity to explore in more depth the following elements of engagement: understanding, empathy, interest, reflection and meaning making. The importance

	of being on location and app technology are also considered in greater detail. The overall length of the site visit was typically three hours in duration, approximately 30 minutes of which was spent in the pre-visit briefing, an hour and a half on location in the Park and a further hour in the post-visit assessment and interview.
5 Process data	Quantitive and qualitative data were collected from the pre visit questionnaire, post visit questionnaire, the emotion wheel and the engagement wheel and digitally collated into Microsoft Word documents and Microsoft Excel spreadsheet. The interviews were digitally recorded as MP3 files and later transcribed.
5.1 Collate quantitive data	Quantitive data was collated from the pre visit questionnaire, post visit questionnaire, the emotion wheel and the engagement wheel and digitally collated into Microsoft Word documents and Microsoft Excel spreadsheet.
5.2 Collate/code qualitative data	Qualitative data collated from the questionnaires and the transcriptions of the interviews were coded using grounded theory techniques. Existing themes from the preliminary studies were confirmed and new emerging themes were identified.
6 Analyse data	Quantitive data was analysed as described in chapter 3
7 Report results	Results from the Victoria Park study have been reported in the researcher's PhD dissertation. A paper has been submitted to the 4th AHRC Connected Communities Heritage Network Symposium (see Appendix 6E).

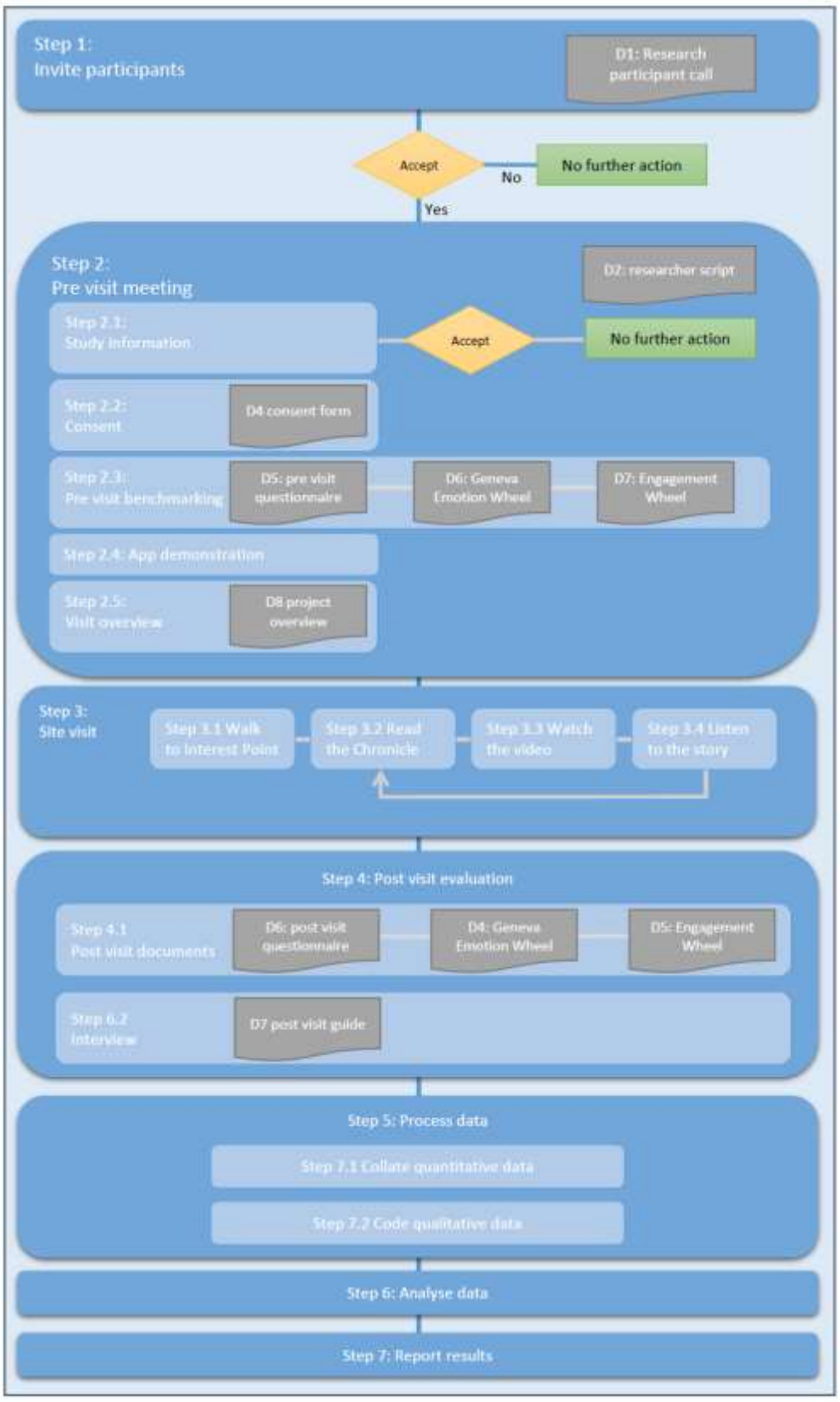


Figure 3-5 Victoria Park evaluation SOP (Wilkinson, 2018)

3.4.5 Validation and quality assurance

Good practice guidelines relating to grounded theory (Charmaz, 2006) and thematic analysis (Braun and Clarke, 2006) were used as benchmarks to judge the quality of the research processes within these areas and to validate the research findings. Tables 3-2 and 3-3 below provide details of the checklists used.

Judging the Quality of the Research (Charmaz, 2006)	
1	Are the definitions of major categories complete?
2	Have I raised major categories to concepts in my theory?
3	How have I increased the scope and depth of analysis in this draft?
4	Have I established strong theoretical links between categories between categories and their properties, in addition to the data?
5	How have I increased understanding of the studied phenomenon?
6	What are the implication for this analysis for moving theoretical edges? For its theoretical reach and breadth? For methods? For substantive knowledge? For actions or interventions?
7	With which theoretical substantive or practical problems is this analysis most closely aligned? Which audiences might be most interested in it? Where shall I go with it?
8	How does my theory make a fresh contribution?

Table 3-2 Judging the quality of grounded research (Charmaz, 2006, p155,156)

Process	No.	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'.
Coding	2	Each data item has been given equal attention in the coding process.
	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated.
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive.
Analysis	7	Data have been analysed - interpreted, made sense of - rather than just paraphrased or described.
	8	Analysis and data match each other - the extracts illustrate the analytic claims.
	9	Analysis tells a convincing and well-organised story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly.
Written report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done - i.e., described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as *active* in the research process; themes do not just 'emerge'.

Table 3-3 Checklist for good thematic analysis (Braun and Clarke, 2006)

4 Chapter Four: Preliminary Studies

4.1 Introduction

This chapter addressed research objective 2 and research questions 5 to 8 as outlined in sections 1.3.2 and 1.3.4 respectively, pp 1-12 and 1-13. To further understand the challenges of designing interpretive digital media two preliminary studies were conducted: the Digital Building Heritage Project review and the Mobile Apps study. This chapter presents the methodology and research results from both which will inform the development of the guide and the prototype product.

4.2 Digital Building Heritage Project review

The Digital Building Heritage Project review examines the experiences of cultural heritage practitioners and digital designers in designing digital products to interpret cultural heritage.

4.2.1 Background to the review

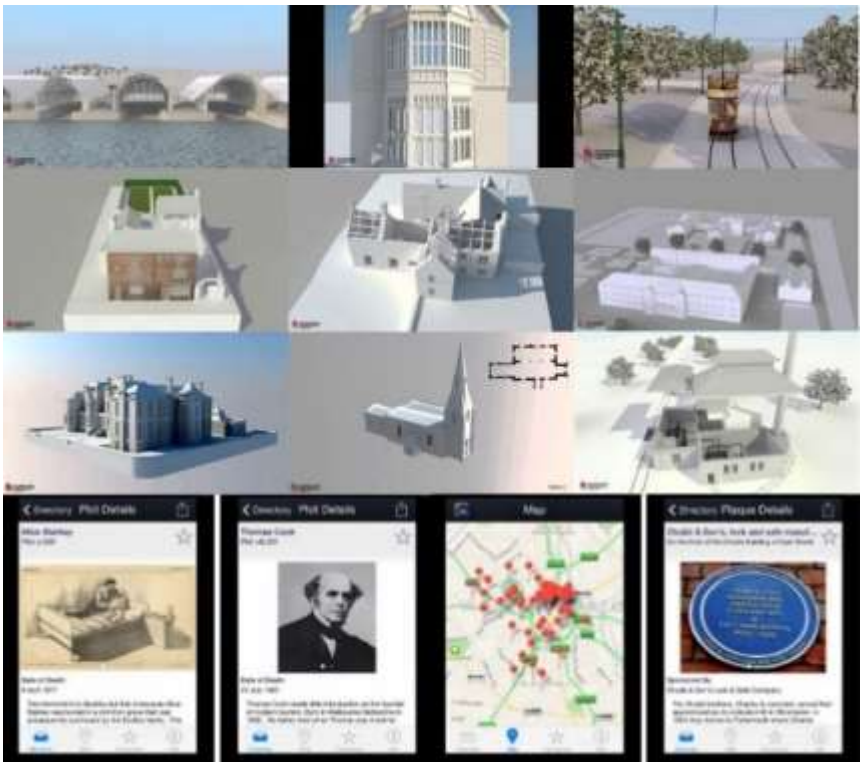


Figure 4-1 Digital Building Heritage Projects (Higgett and Wilkinson, 2015)

Jointly funded by the AHRC and the HLF this review was part of the *All Our Stories* grant programme aimed at supporting community heritage. The Digital Building Heritage Project was a collaboration between De Montfort University and 11 heritage groups to develop a range of digital resources to meet the aims and objectives of the heritage groups. Nine of the projects focussed on 3D modelling with flythrough animations, two projects produced mobile phone apps and one project resulted in a 3D printed architectural replica model of the heritage asset.

Alfred Williams Heritage Society, Wiltshire: digital reconstruction of Swindon and Highworth Union workhouse with audio.

Diseworth Heritage Trust: high resolution fly through of laser point cloud data of St. Michael and All Angels church in Diseworth plus a digital animation of the development of the Church, from the 10th century through to the present day.

Friends of Court Farm, Pembrey: digital reconstruction of Court Farm, a late medieval farm and manor house.

Friends of the Welford Road Cemetery: mobile phone App with interactive/geo-location map and historical biographical content.

Leicester Transport Heritage Trust: digital animation of Leicester's trams and the Stoneygate Tram Depot, plus a 3D digital image of Tram 31

Outside Centre, Wolverhampton: digital reconstruction of the Wolverhampton Women's Hospital.

Pembroke Dock 2014, South Wales: digital reconstruction of Pembroke Dock with fly through animation.

Swannington Heritage Trust, Leicestershire: digital reconstruction of the Swannington incline with audio, animated fly through and animation of some working parts.

The Haywood Society, Staffordshire: 3D digital reconstruction of a Tudor bay window from Old Tixall Hall in Staffordshire, England, plus a 3D printed model of the Tixall Window.

Wigston Framework Knitters Museum Ltd, Leicester: digital reconstruction of the museum showing development over time.

Wolverhampton Civic and Historical Society: mobile phone App of the Blue Plaques with interactive/geo-location map and historical biographical content

This review was conducted by the researcher as part of an AHRC funded micro-legacies project, the aim of which was to "understand the values and outcomes (whether positive of negative) of the Connected Communities heritage research" (Connected Communities 2014). Issue addressed in the review which relate to this study are:

- To what extent did the collaborative approach of these projects, and the partnership between the heritage groups and the University, add value to the process of producing a useful and effective digital media asset?
- To what extent did collaborative research contribute to the creation of the digital resource?
- To what extent has the digital resource met the aims and objectives of the heritage partners?

Core themes evolving from these questions were:

- **Legacy and Impact**: In what ways has the digital heritage product brought value to the project stakeholders?
- **Collaborative Research**: How did the process of collaborative research contribute to the creation of the digital heritage resource and what can be learned from this process?
- **Project Management**: What aspects of the project worked well and what got in the way?

- **Product Evaluation:** How successful and effective was the digital resource in meeting the original aims of the project?

4.2.2 Review methodology

4.2.2.1 Participant selection

All projects were included in the review and each heritage partner was approached and consulted by the researcher. A smaller number were invited to take part in semi-structured interviews and two site visits were conducted. The wide geographical spread of the projects and the resources of the researcher restricted the site visits to those in Leicestershire, each type of project was represented in the site visits and semi-structured interviews. Other key personal involved in the review included the Principal Investigator (PI), the Co-Investigator (CI) and one of the lead developers. Case studies for each project can be found in Appendix 4A.

4.2.2.2 Data collection

Quantitative and qualitative data was collected from a range of sources using a variety of techniques including the collection of web analytics for on-line resources, data gathered from media coverage and the web presence of the heritage partners and the Digital Building Heritage Group website; an on-line survey with all the heritage partners; semi structured interviews and site visits to two heritage partners. Interviews were transcribed and key themes identified in relation to the review questions outlined above. Review documents can be found in Appendix 4B and a full set of data and results are in Appendix 4D.

4.2.2.3 The review process

A standard operating procedure (SOP) was created to conduct the review and analysis process, figure 4-2 page 4-111). Each step of this procedure is described below.

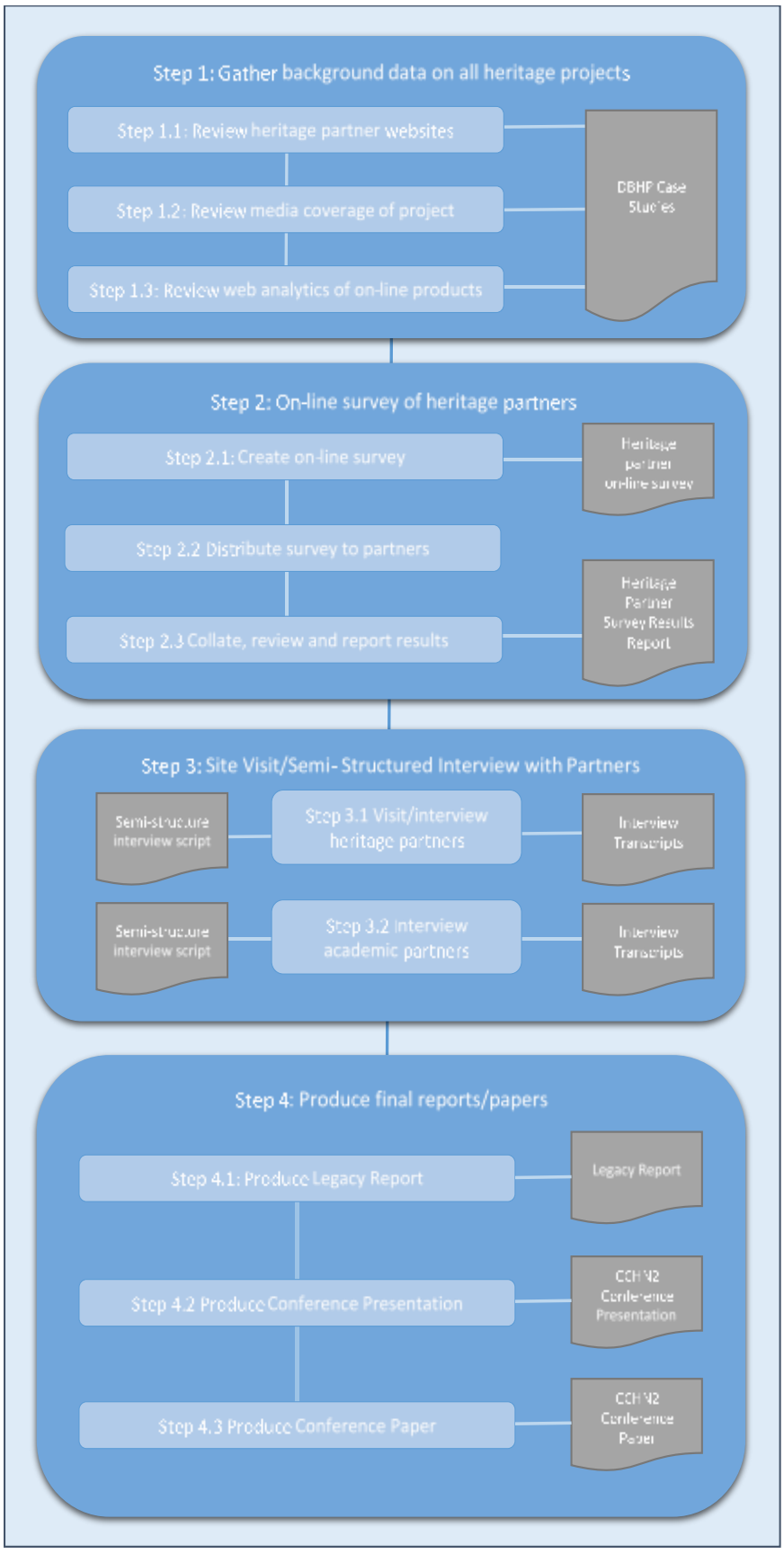


Figure 4-2 Review standard operating procedure (Wilkinson, 2018)

SOP Steps	Process
Step 1 Gather information on all heritage partners	The web presence of each project partner was reviewed by the researcher. Analytics including app downloads and YouTube video views were collected to determine product usage. Case studies for each project are available in Appendix 4A.
Step 2 On-line survey of heritage partners	Heritage groups were approached by email to complete a survey, a copy of which is available in Appendix 4B. Results of the survey were collected and are reported in 4.2.3., page X.
Step 3 Site-Visits/Semi-structured interviews with project partners	Interviews were conducted with heritage groups and academic partners during which semi-structure interviews were undertaken to ascertain opinions on the following: experiences of collaborative working; relationship with the partners; the use and impact of the digital product; the most beneficial aspects of the project; and how they might advise other heritage groups who were considering undertaking a similar project. Questions used are in Appendix 4B. Results are reported in 4.2.3., page X. Transcripts of the interviews are in Appendix 4D.

Step 4 Produce final reports/papers	A report was written for the Connected Communities Heritage Legacies project. Results were presented at the Connected Communities Heritage Network Symposium in 2015 which also resulted in an academic paper (Wilkinson and Higgett, 2015). Details of the report and the presentation are available in Appendix 4E.

4.2.3 Results of the review

4.2.3.1 Web analytics

Heritage Group	**Uploaded**	**YouTube Views** (as @ 16/11/14)
Digital building reconstruction with flythrough		
Alfred Williams Heritage Society, Wiltshire	06-Jan-13	59
Diseworth Heritage Trust	28-Feb-14	93
Diseworth Heritage Trust	30-Jan-14	116
Diseworth Heritage Trust	06-Jan-14	31
Friends of Court Farm, Pembrey	07-Jan-14	48
Outside Centre, Wolverhampton	13-Sep-13	115
Pembroke Dock 2014, South Wales	07-Jan-14	453
The Haywood Society, Staffordshire	06-Mar-13	355
Wigston Framework Knitters Museum Ltd, Leicester	07-Jan-14	51
Digital building reconstruction with flythrough and animation		
Swannington Heritage Trust, Leicestershire	06-Jan-14	57
Leicester Transport Heritage Trust	29-May-13	1,331
Mobile Phone App		
Friends of the Welford Road Cemetery, Leicester	10-Feb-14	n/a
Wolverhampton Civic and Historical Society	21-Jan-14	n/a

Table 4-1 Web analytics (Wilkinson, 2015)

Table 4-1 above shows the date that the digital asset was uploaded to the internet or launched as a mobile phone app. The number of YouTube views for each of the project video assets is shown in the final column and in figure 4.3 page 4-114.

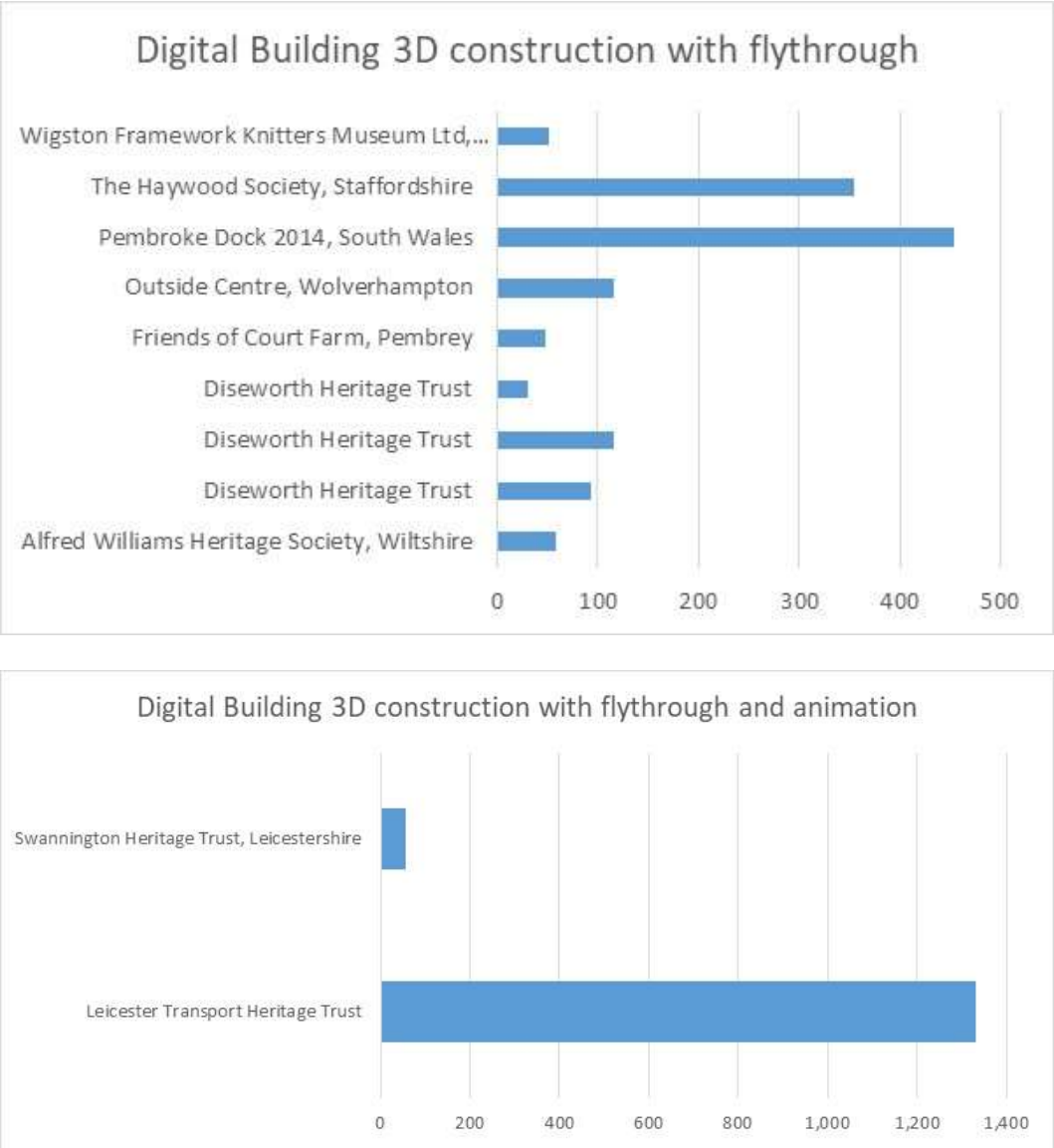


Figure 4-3 YouTube views as at 16/11/14 (Wilkinson, 2015)

4.2.3.2 On-line survey

The heritage survey was sent to all 11 heritage groups of which three responded. The results are as follows:

Section One: Exploration of original aims and objectives

1.1 What was your initial objective in commissioning/taking part in this project?
"We wanted a project to commemorate the 200 year Bicentenary of our town and something that would leave a legacy."
"To tell the story of a C16 "beautiful gothic window" and its owners."
Having the opportunity to obtain some animation to display as part of the interpretation for the general public to "view when the tram depot is open."

	Yes	No
1.2 Has the digital output of this project has helped you to meet these aim	3	0
1.3 Has the project outcome been different from what you expected?	3	0

1.4 If yes, in what way?
"Our idea at the beginning was to do a wider project but in the end we focused on the dockyard which was the reason why the town was built so although different it is very appropriate and we are thrilled with the outcome."
"Although it was necessary to visualise the window with the digital model, the story of the owners was more detailed and interesting than expected."
"Because of lack of time on the part of De Montfort University, we did not get everything which we hoped for (e.g. time line to be tacked on to fly-through or 3D model of tram)."

Table 4-2 Review section 1 (Wilkinson, 2015)

Section 2 Impact Assessment of the Product

2.1 How are you using the digital product produced by this project?
"We have displayed it in various locations throughout the town and at various events." *"It is an essential part of both the book and DVD documentary we produced"* *"The animation is available on the home page of the Trust's website by means of a link to Youtube."*

2.2 We have promoted the digital product (please tick all that apply)	Yes	No
• To our members	3	0
• To the general public	3	0
• On site to visitors	1	2
• Via our website	1	2
• Via twitter	0	3
• Via Facebook	0	3
• Via other social media	0	3
• Via the press (newspapers, radio, TV)	2	1
• Via a launch event or similar	2	1
• We haven't promoted the product	0	3
2.3 Have you evaluated visitor audience reaction to and use of the product?	1	3

2.4 If yes, what did you discover?
"We have only done so subjectively, that is asking people as they watch our video their reaction, we have discovered as we thought, that there is a great interest in the history of the town and the realisation that many although they have an inkling of what exists that there is a lot more to be done to bring that history to the attention/ alive to the wider community"

	A little	A lot	Not yet but will in the future
2.5 The digital product has added value to our visitor experience	0	2	1

2.6 The percentage of visitors who have used/viewed the digital product is (free text answers):

- *between 50% and 90%*
- *about 50%*
- *less than 10%*

	Yes	No
2.7 The digital product has positively impacted on our engagement with the community	3	0

	A little	A lot	Not yet but will in the future
2.8 The digital product has increased our visitor numbers	1	0	2
2.9 The digital product has helped us to interpret, visualise and explain our heritage data in a way that was not previously possible	0	2	1

Table 4-3 Review section 2 (Wilkinson, 2015)

Section 3 Assessment of the Project, Legacy and future plans

3.1 What difference has this project made to your organisation?
"For us this was an 'opening project' to test the waters and see what the potential was and evaluate the interest and learn lessons. In this sense it has been very successful. As an organisation we were set up purely to organise events during the Bicentenary although this project was specific to certain members who wanted a longer term legacy, we have seen some of the divisions that exist and have to work on these now to continue to develop for the future." *"It has increased our visibility and reputation."* *"Proof that the Trust is able to successfully work with a partner."*
3.2 How has working on a collaborative research project added value to your organisation?
"We simply could not have achieved what we did without the collaboration of the university. The value is priceless and we believe the full benefits are yet to be revealed and valued." *"We have increased expertise in audio-visual presentations and the associated equipment"* *"It adds more credibility to the Trust and ticks another box as far as the Heritage Lottery Fund is concerned."*

	A bit too short	Too short
3.3 The time allowed for the project was	2	1
	Yes/No	Yes
3.4 Would you liked to have been more involved in the design of the product?	1	2

	Completely
3.5 The project made me more interested/excited in the use of digital media in promoting and interpreting our heritage	3
	Yes
3.6 Would you recommend other heritage sites to consider developing a digital product?	3
3.7 If yes - why?	
"It has achieved an output that no other media could have done, it has brought a visual aspect that people can relate to immediately, even though we have covered just a small part of what could be done." *"We find it difficult to visualise a 3D object from 2D images and/or text."* *"It captures the imagination of people both young and old."*	

	Yes
3.8 Would you consider working on a similar collaborative project with a University again?	3
3.9 Would you this type of collaborative project (working with university partners) to other heritage sites?	3
Is there anything else you would like to tell us which you feel will add to our understanding of your experience of this project and the impact that collaborating with the university has made on you and on your heritage project	
"We feel this project was just a toe in the water, there is so much more that could be done, we have learnt a lot and benefited a lot from the expertise of our partners, with this experience under our belt and local groups seeing the outcome of what we have achieved we feel there is potential to develop some really significant projects for our unique town but the issue on our side is getting local partners on board upfront with a coordinated effort with university input at the planning stages whether this is feasible or of interest to partners we are not sure." *"It would have helped considerably if DMU had set aside an intermediary (between the leader of the projects and the people doing the work) as a communications officer."*	

Table 4-4 Review section 3 (Wilkinson, 2015)

4.2.3.3 Site visits and interviews

Below is a summary of the main results from the interview data:

4.2.3.3.1 The contribution of the digital project

All the projects received a digital output as a result of this project, enabling them to increase their level and type of interpretation. Some products provided visualisation of data which was not easily possible through other interpretation methods, such as the digital reconstruction of buildings which no longer exist and the representation of changes to a building over time. The mobile phone app products were reported to provide an enhanced on-site user experience. The projects provided opportunities to use the digital product to promote and raise the profile of the heritage site both locally and nationally. A number of the products received press coverage, for example Pembroke Docks and the Welford Road Cemetery App had official public launch events. The projects helped heritage groups consider the potential of using digital technology; broadening horizons and making groups more aware of what was available as well as raising their confidence and ambition.

4.2.3.3.2 The value of collaborative research

Universities gained access to a live project enabling academic staff to build their skills as project managers in a genuine 'real world' client relationship. Heritage partners developed new skills in research, and access to leading edge technology and academic advice. Heritage groups were encouraged to focus their content and prioritise the way in which they provide interpretation. For example, the app projects encouraged the heritage practitioners to think about the people and content they wanted to include in their aps and the stories that they wanted to tell.

4.2.3.3.3 The impact of collaborative heritage research

Heritage partners reported an increase in their profile, for example some of them benefited from press coverage associated with their digital product and one group was able to discuss and promote their digital product at a national conference, alongside their University colleagues. Increased access for the University to 'real' projects enabled

them to enhance not only their research but their teaching and learning through the additional development of student projects with the heritage groups.

4.2.3.3.4 Other Lessons Learned

Project Management and Communication: The majority of the project management was undertaken by the university partner. A practical project management model was devised for the creation of the digital reconstructions and was used to facilitate the management of all the digital reconstruction projects. Differences in culture and working practices may have contributed to some communication issues and there does seem to have been occasional confusion between the university and heritage groups as to how much time designers and developers had available to work on a specific project.

Time: There is evidence that both the heritage groups and the community partners felt that the time allocated for the completion of these projects was too short. The timetable for completing all the projects was tight, due to the number of projects undertaken and whilst this was carefully planned at the start of the programme there was little allowance for slippage. This may have caused additional scheduling difficulties for the some university staff who would find it more difficult to work on these projects during busy teaching periods.

Money and Resources: The mechanism for allocating funding to both parties involved in this project created significant pressure on the university partner at the outset of this programme and the limited amount of time available for University to prepare their bids in order to secure funding for the projects may have impacted the university's ability to undertake a full scoping exercise for each project. The impact of this was felt later in the projects as some projects had insufficient funding and resource to fully meet client expectations.

Expectations: There is evidence that expectations of the heritage groups did not always match that of the university partners in a number of areas including the amount of money and time that would be spent on the project by the university, the technical aspects of what was possible and the potential outcomes that would be produced.

Some of this may result from the speed with which the university had to respond to the funding proposals at the outset of the programme and some may result from a lack of common understanding between both parties as to the feasibility of some proposals.

Evaluation and Testing: There is little evidence that the products had been comprehensively tested or evaluated. The resource available, to the university, for the production of the product allowed little scope for activities beyond development and as such user testing and product evaluation had been minimal with some technical testing to ensure that the products were functional. There is a small amount of anecdotal evidence from the heritage partners that visitors, and others who may use the products, liked them and found them to be of interest but no formal user evaluation beyond this.

Product Usage and Sustainability: All projects had a tangible outcome in the form of a digital product, a number of which are reported as being used by the heritage sites in a variety of ways. A small number of the heritage partners had not been able to use their product. You-tube statistics demonstrate download figures for some of the digital reconstructions being as low as 30-50 views. Others however have download figures in the hundreds and one of the projects, the Leicester Transport Heritage Trust, received in excess of 1,300 hits. With regard to sustainability the app products were designed and delivered to the clients with the facility for the client to be able to add and amend content. Heritage clients were trained and equipped to alter the historical data within their app and are not reliant on further help from the University to enable them to do this. There is evidence that the heritage partners had successfully made such alterations to their data.

Ambitions and New Horizons: The projects provided heritage groups with access to new technologies that they had either not known about or thought available to them. Being involved in a collaborative project with a focus of digital products has enabled them to 'think bigger' and be more ambitious about their use of digital media. There was a strong sense that 'this is just the beginning' and that the heritage partners were more enthused about using digital products in the future.

4.2.4 Analysis of results

In the light of the lesson learned from this review the following recommendations are made for the development of the design guide.

4.2.4.1 Strategic Planning and Project Management

Set clear objectives – know what you want to achieve: defining and understanding the main objective of the project is key to a achieving an outcome which will meet those objectives. The stated aim of most of these projects was to increased audience engagement: those who succeeded in this understood the nature of their target audience and created products which suited this need. Heritage practitioners and designers should be encouraged to think about their audience needs and how their visitors will use the product being created at a very early in the design process.

Project scoping – understand the feasibility is your project: Understanding the size and scope of a project is something which should be clarified and communicated at the outset of a project with all partners in agreement as to what is feasible and what is viable. Considerable pressure and frustration was created for the project partners where the scope of the projects was more than that which could be achieved with the available resources. Resourcing for the maintenance and life of the project should also be considered, not just how the product can be created but how it can be supported once it is launched.

Plan for product testing and involve users: Effective testing of digital products should be discussed at the start of project and included in the project plan. The limited amount of time available for testing the mobile apps resulted in products that, whilst working, had unresolved technical issues which required attention before they can be considered fully functioning. The potential impact of this is that users become frustrated with the product if they perceive that it does not work they will cease to use it. Product testing should be clearly included in the project plan, even if this limits the amount of time for content development. It would be better to have less content that works well than more content which is frustratingly unworkable.

4.2.4.2 Product and Project Evaluation

Consideration should be given as to how and when evaluation of the products and of the project as a whole should be conducted. Whilst the Digital Buildings Heritage Project successfully created a range of digital products it is unclear how successful these products were in meeting the stated ambitions of the heritage partners: to attract new audiences or engage people in new ways with the heritage. Further research is required to assess more accurately the impact of these digital products on visitor engagement, however information on this would be very difficult to ascertain as there was no initial benchmarking to provide a tangible baseline for engagement. The process for evaluating both the project and the products should be part of the initial project plan and data should be collected throughout the project.

4.2.4.3 Product Usage and Promotion

Although a tangible product was created for each heritage partner it was disappointing to see how few were being used to their full potential as evidenced by the limited number of app downloads and YouTube videos. Good examples of product promotion and ongoing use included the exhibiting the Pembroke Dock reconstruction video in the town library, the public launches of the phone apps and the display of the tram animation video by the Leicester Transport Group at open days. Other products do not appear to be been promoted or some were not even used by the heritage groups. Designers and heritage practitioners should consider how they will market and promote the use of their interpretive digital media to ensure it meets the intended aims and objectives of the project.

4.3 Mobile Apps study

The Mobile Apps study examines the impact of smartphone apps on the visitor experience.

4.3.1 Background

Created as part of the Affective Digital Histories research project the Sounds of the Cultural Quarter and Hidden Stories mobile phone apps were designed to provide an

affective experience for visitors to the Cultural Quarter in Leicester (Affective Digital Histories n.d.). To explore these issues this study examined:

- visitor relationship with and attitude towards the Cultural Quarter area before and after the site visit,
- visitor knowledge of the Cultural Quarter before and after the site visit,
- visitor interests in history generally, and local history, before and after the site visit,
- the extent to which, and the way in which, using the mobile phone apps to explore the Cultural Quarter impacted on the participant's emotional relationship with the area and their engagement with the location.

Full details of the mobile phone apps, the Cultural Quarter and the Affective Digital Histories project are available in in Appendix 4F. A brief overview of the Cultural Quarter, the research project and both apps is provided here to give contextual background for the study. The results of this study are used to inform the development of the *guide*.

4.3.1.1 The Cultural Quarter, Leicester

The Cultural Quarter is a small area of Leicester within walking distance of the main retail centre of the city and the railway station. Rich in cultural heritage the area has examples of modern and historical architecture, juxtaposing modern developments with dilapidated Victorian buildings. The area is a mix of re-purposed factories from the 19th century and glass fronted flagship construction projects from the 21st century. Situated largely within the boundaries of the St George's Conservation Area (Urban Design Group, Leicester City Council, 2003) the Cultural Quarter is home to many historically and culturally important buildings, listed here in date order, oldest to newest: St George's Church 1879; the former bootlace warehouse Alexandra House, the Leicestershire Disabled Guild 1909; the Pfister and Vogel leather warehouse 1923; Charles Street Police Station 1933; the former Odeon cinema 1938; Curve Theatre 2008 and the Phoenix Cinema and Art Centre 2009.

Figure 4-4 Cultural Quarter Leicester (Wilkinson, 2018)

Figure 4-5 St Georges Cultural Quarter map (Leicester City Council, 2016)

The St George's area was “at one time a hive of industry, dominated by factories and warehouses. From the 1960s, with growing foreign competition, changing fashions and damaging domestic policy, industry began to decline. Old family firms were bought-out, relocated, or faced increasing redundancies. Smaller firms set up business in the old factories until, by the late 1990s, much of the area was unused altogether” (Affective Digital Histories, n.d.). Throughout the 1960s and 70s the area was also home to a wide

variety of nightclub and music venues including the Palais de Danse. Many of the older buildings have been repurposed. Victorian factories such as Alexandra House have been converted into apartments offering city centre living; the former Leicester City Bus depot is now the Leicester Creative Business Depot, a creative hub with workspace and studios for creatives, artists and design makers and the Two Queens art gallery occupies a former warehouse. Significant investment in the area by the city council, plus the opening of new bars, restaurants and music venues have transformed the area from a declining part of the city to a significant cultural destination. The City council is committed to prioritising the continued development of this part of the city for the benefit of businesses, residents and visitors (Leicester City Council, 2016).

4.3.1.2 The Affective Digital Histories Project

Figure 4-6 Affective Digital Histories apps (Wilkinson, 2015)

4.3.1.3 Mobile Phone App: Sounds of the Cultural Quarter

The Sounds of the Cultural Quarter App is designed to allow visitors to "explore Leicester's Cultural Quarter through sounds from past and present." (GooglePlay, n.d. a). According to the Google Play store website you can "track your location on the map and immerse yourself in the soundscapes to discover the Cultural Quarter from a different perspective". The app provides an immersive, location based, experience of the area through a soundscape of over 30 authentic recordings representing various aspects of the Cultural Quarter. Divided into two categories, present day recordings

include clips of journalists talking inside the Leicester Mercury office, theatre goers chatting after a performance of Annie at Curve, music from the dance venue Studio 79, bells from St Georges' Church and car engines from inside Big John's Auto Service garage whereas sounds from the past include representations of people splashing around in the now demolished Vestry Street baths, mechanisms of the old Printing Works, singing from the Guild of the Disabled and music from venues vibrant in the 1970s and 19080s such as the Leicester United Caribbean Association and the Palais de Dance. Modern day sounds were recorded specifically for inclusion in the app and sound archives were used to source authentic clips for the past sounds.

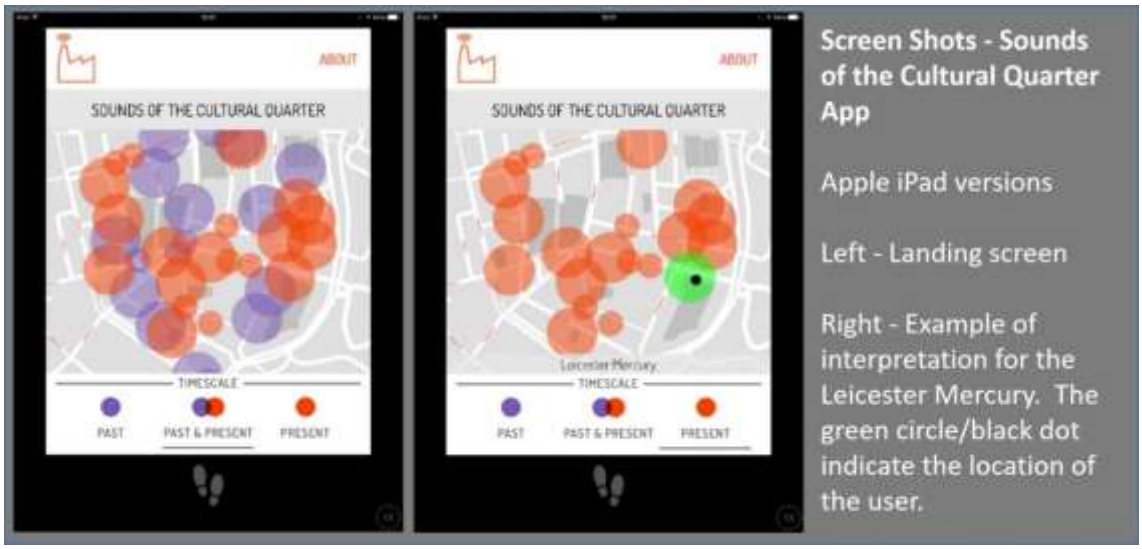


Figure 4-7 Sounds app (GooglePlay, n.d.)

Interface – design and functionality*:* The interface is a map of the Cultural Quarter with a simple display of the roads and some notable buildings. Circles overlaying the map represent the physical location of each sound clip: orange circles signify sounds from the present, purple circles sounds from the past. Visitors can choose to listen to sounds from either period, or a mixture of both. The location of the visitor is indicated by a black dot and by the relevant sound circle turning green.

The footprint symbol at the bottom of the screen controls the geolocation feature which visitors can turn on or off. When geolocation is activated sounds automatically play as the visitor physically travels into the geographic zone represented by the range of the circle. The size of the circle indicates the range of the sound and the volume of the sound

increases the nearer you are to the centre of the circle. Overlapping circles allow visitors to experience sound simultaneously as they transition through the intersecting zones. Interesting effects can be gained by mixing sounds from different zones and from different time periods. When the geolocation is turned off visitors can listen to the sounds simply by tapping the circle they would like to hear allowing the app to be used away from the Cultural Quarter.

Minimal interpretation is provided. Other than knowing that the sound is from the past or present, by virtue of the colour of the circle the only information provided is a small tag which identifies the source of the sound, which might read 'flats' or 'music venue'. Some tags are generic, others are more specific, such as 'Athena' or 'Leicester Mercury'. Visitor would need some level of local knowledge to understand these labels.

Technical issues: Prior to running the study a short assessment was made of the app to identify potential technical difficulties which might negatively affect the visitor experience. For the most part the app operates well, however there are a few issues: the android version does not have a 'pinch' function which means it is not possible to resize the map, resulting in a the map being difficult to see and use; i-phone devices are quicker, more responsive and more accurate in their geolocation functionality than the android devices; a number of the study participants complained about battery damage caused by the need to keep the screen active.

4.3.1.4 Mobile Phone App: Hidden Stories

The Hidden Stories app has "woven creative writing with smartphone technology to create a fascinating literary exploration of Leicester's Cultural Quarter; specially commissioned poetry, plays and narrative fiction explore urban locations and their history" (GooglePlay, n.d. b). According to the Google Play website visitors can, "follow trails around the area to find original content and uncover the Cultural Quarter's hidden stories". As with the Sounds of the Cultural Quarter this app is intended to provide an immersive and alternative experience of the area introducing the visitor to different ideas enabling them to reimagine urban history.

Figure 4-8 Stories app (GooglePlay, n.d.)

Hidden Stories provides five different creative writing texts. Each text has an associated trail and each trail has a starting point with locations associated with each chapter in the text. Visitors can either follow the trail, reading the chapters in the intended order, or they can choose to read the chapters out of sequence. The five stories are:

An Imperial Typewriter: the story of a young Ugandan Asian man living in Leicester in the 1970s and working for the Imperial Typewriter Company. Set against the backdrop of the Asian workers' strike of the 1974 the protagonist of this short story steals a typewriter and runs away with it.

Crow Step: a selection of poems sampling a small selection of the stories about the buildings. The focus is on architecture and ornamentation, their uses and history and the passions that people had for them.

For the Love of Something: set in 1979 and presented as a play, this is the story of a young Pakistani woman and her experiences of working in the Rowley's factory.

Love the Life You Live, Live the Life You Love: presented as a choreopoem this story features Martin, a 24 year old gay duel heritage Leicester man, retelling an experience he had on a celebratory night out in the St George's churchyard in the 1980s. Eight out of a total of 68 verses are included in the app.

Marginalia: written in the first person the author takes the reader on a personal trip, exploring the Cultural Quarter with the help of a trickster guide in the form of someone he names Elephant Head, a Ganesha-esque skateboarding graffiti-artist.

Interface – design and functionality: The app has a simple interface design, featuring a hand-drawn map of the area. Initially all the story trail threads are displayed, but selection of one of the stories by tapping on one of the associated icons at the bottom of the screen brings up the introduction page for that story and alters the map image to display only the trail associated with that story. Each story is introduced with a brief overview of the author. Selection of the Map option at the top of the screen will display the trail associated with this story.

The white marker signifies the starting point for the story and although there are no direct instructions to do so there is an assumption that the visitor will position themselves at this location to read the first chapter.

The first chapter is displayed on the screen when the user taps on the white start icon. Different stories are presented in different ways, for example, *An Imperial Typewriter* uses a courier type font and each chapter is prefixed with a hand-drawn animated graphic image, the text in *Crow Step* is animated to appear on the screen as if it is being typed, *For the Love of Something* is presented as a play with stage directions and dialogue and *Love the Life You Live, Live the Life You Love* is the only story to contain photographs from the area.

Technical issues: Prior to running the study a short assessment was made of the app to identify potential technical difficulties which might negatively affect the visitor experience. For the most part the app operates well, however there are a few issues: the android version does not have a 'pinch' function which means it is not possible to resize the map, resulting in a the map being difficult to see and use and for both versions the text for *For The Love of Something* disappears making it impossible to read.

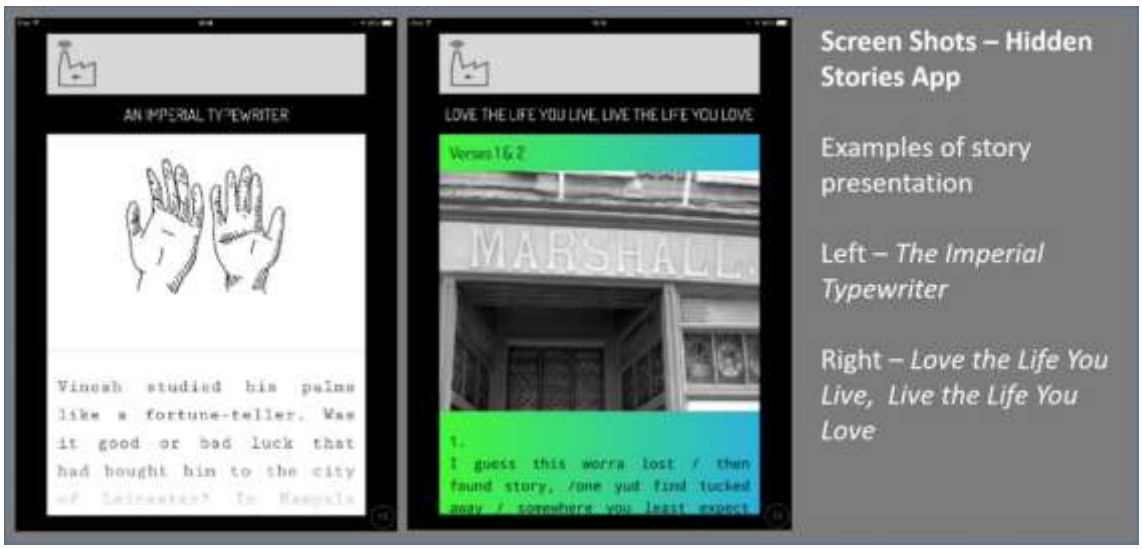


Figure 4-9 Story screens (GooglePlay, n.d.)

4.3.2 Study methodology

Questionnaires, diagnostic tools and semi-structured interviews were used to provide empirical evidence and to test visitor relationship with the cultural heritage site before and after the site visit. A grounded theory approach was used to analyse the qualitative data collected to identify and explore themes arising from the data which would provide deeper explanation of the phenomena experienced when visiting cultural heritage sites using location based digital media.

4.3.2.1 Participant selection

Research participants should represent the target audience for the issue being assessed, however, this proved to be problematic for the evaluation of the Cultural Quarter mobile phone apps as the intended audience for these products was not articulated or made clear by the designers or creators. For this reason participant selection for this study was random and reliant on volunteers who responded to the researcher's invitation to participate in the study. Grounded theory indicates that at sample size of between 20 and 30 participants should provide sufficient data to identify themes and trends (Creswell, 2013) and so the researcher aimed for approximately 30 participants to undertake the study.

4.3.2.2 Data collection

Quantitative and qualitative data were collected using a range of techniques including questionnaires, diagnostic tools and semi-structured interviews with focus groups. Qualitative data collected from the questionnaires was coded following 'thematic analysis' principles (Braun and Clarke, 2006)

Quantitative data collected from the questionnaires was collated and analysed using a Microsoft Excel spreadsheet.

Qualitative data was assessed by the researcher and codes were developed for each new idea. Codes that were found to be conceptually similar in nature or related in meaning were grouped together as themes, figure 4-10 page 4-131. Codes and themes were collated and analysed for each mobile phone app using a Microsoft Excel spreadsheet

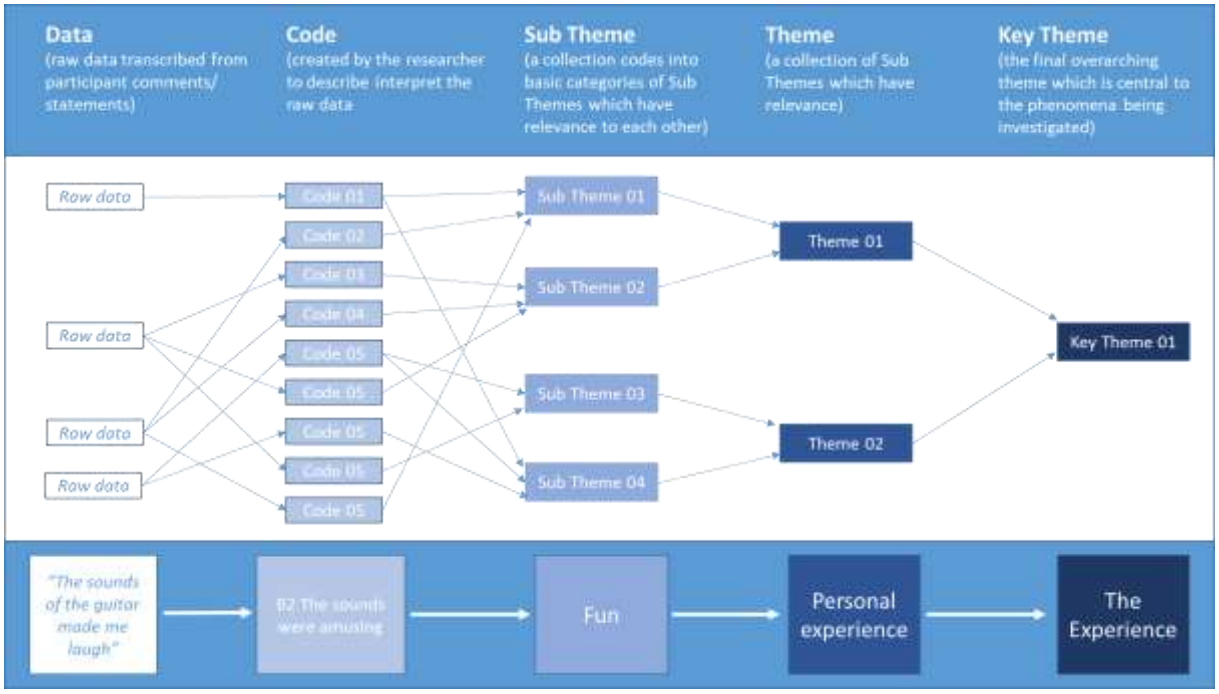


Figure 4-10 Mobile Apps study coding framework (Wilkinson, 2018)

4.3.2.3 The study process

A total of 16 research visits were conducted, each following the standard operating procedure shown in figure 4-11, page 4.132. Examples of all the study documentation are available in Appendix 4C.

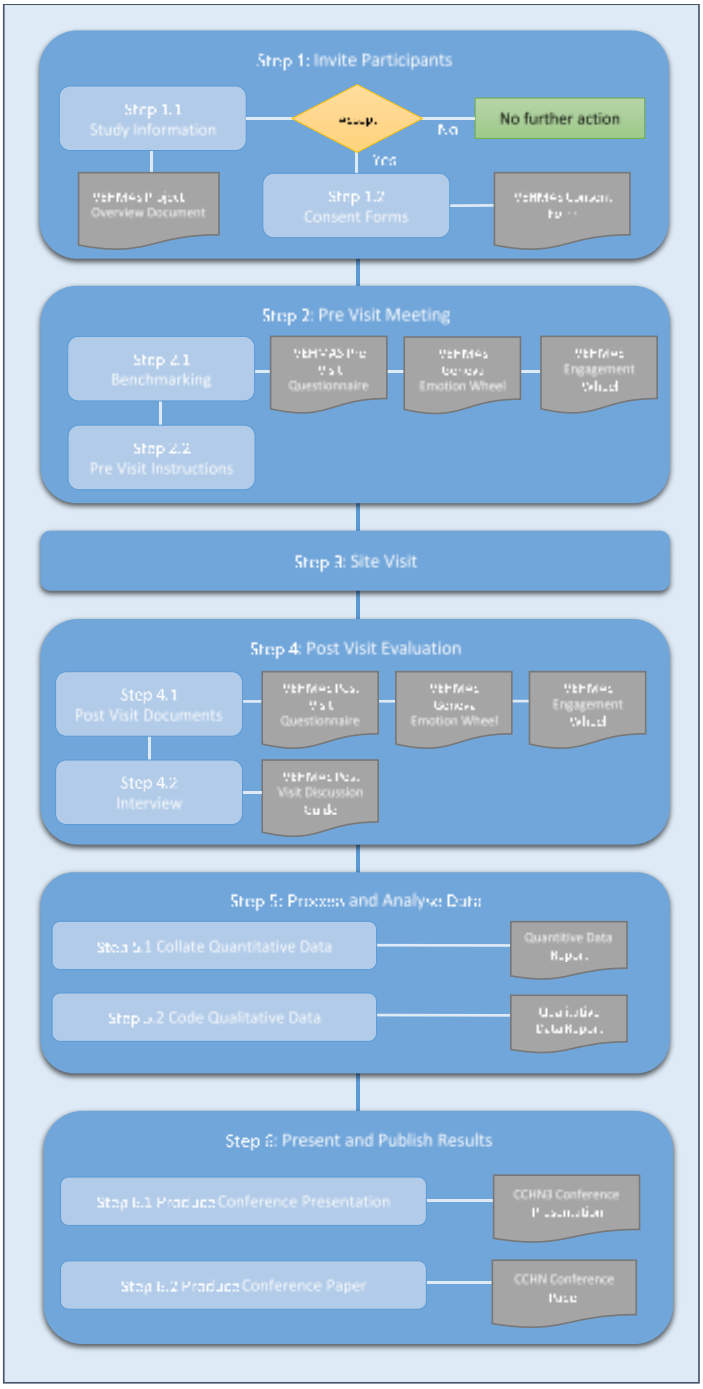


Figure 4-11 Study standard operating procedure (Wilkinson, 2018)

SOP Steps	Process
1 Invitation to participants	Research participants were invited, by the researcher, to take part in the project. Participants were drawn from three areas: students from the Design and Innovation MA programme at De Montfort University; students from the MA Museum Studies at the University of Leicester; and local residents known to the researcher. Having accepted the invitation, arrangements were made to visit the Cultural Quarter with the associated mobile phone apps.
1.1 Study Information	Prior to embarking on the study visit the researcher met with the participants to introduce and explain the purpose of the study, what would happen during the visit to the Cultural Quarter and what the participant would be required to do as part of the research. The *Project Overview Document* is provided for reference.
1.2 Consent Form	Participants were given to opportunity to take part or withdraw from the project and, if they agreed to proceed, they were asked to complete the *Consent Form*.
2 Pre Visit Meeting	Prior to each visit participants were briefed. A short overview of the Cultural Quarter was provided to ensure that the participants understood the area they were exploring. The background and development of the apps were described with an explanation of the Affective Digital Histories research project. The researcher gave a short demonstration of the app and instructions were given to participants explaining how to operate the app. It was made clear that this study was investigating the impact of the apps on the participants' emotional reaction to, and their engagement with, the Cultural Quarter rather than a general evaluation of the apps themselves. Known technical inadequacies of the apps were described so that these issues did not distract the participants more than was necessary. The researcher ensured that all participants were confident in using the app before they embarked on their visit. The role of the researcher was explained and it was made clear that whilst the researcher would accompany participants on their visit the researcher would not steer or guide in anyway, although advice will be given if participants were struggling with the app.

2.1 Benchmarking	Participants were asked to complete three documents to benchmark their thoughts, opinions and knowledge before using the app: the *Pre Study Participant Form*, the *Geneva Emotion Wheel* and the *Visitor Engagement Wheel*. The *Pre Study Participant Form* is divided into four sections: participant details; current relationship with history and heritage; current relationship with/usage of mobile phone apps and digital technology and current relationship with the Cultural Quarter. Personal information including gender, age, residency and educational background was collected to facilitate analysis of data across these groups. Questions on the form are designed to collect benchmark data in relation to the following: participants' interest and knowledge of history; participants' technical confidence expertise in using app technology as well as and participants' interest, knowledge and thoughts relating the Cultural Quarter. Questions are both closed and open. Forced responses and multiple choice are used to ensure consistence of response. Open questions are used to provide explanation where further information could enhance the quality and detail of the gathered data. The *Geneva Emotion Wheel* (Scherer, 2005) was used to capture how people felt about the Cultural Quarter prior to and after, their visit. This model was selected as it has a user-friendly graphical form making it simple and straight forward to use. The interval scaling allows systematic assessment of the intensity of feeling which lends itself to statistical processing. Participants were asked to rank the intensity with which they felt each listed emotion. Information was collected using the *Geneva Emotion Wheel*, figure 4-12 p 4-135, in which the intensity of the emotion is represented by a series of expanding circles radiating from a central point. The larger the circle and the further away from the central point the more intensely the emotion is felt. The emotions measured were: interest, amusement, pride, joy, pleasure, contentment, love, admiration, relief, compassion, sadness, guilt, regret, shame, disappointment, fear, disgust, contempt, hate and anger. To further understand the factors associated with visitor engagement (both processes and behaviours) the researcher used information regarding engagement, which had been gathered from

	the literature review, to adapt the *Geneva Emotion Wheel* and create the *Visitor Engagement Wheel,* figure 4-13 page 4-136 thus contributing towards the creation of a 'language' for engagement. Similar in format to the *Geneva Emotion Wheel* participants were asked to indicate the intensity with which they felt each of these engagement states in relation to the Cultural Quarter.
3 Study visit	Participants were asked to use the apps as their guide to the area: to imagine that they had just arrived in Leicester, that they had downloaded the app and were now going to use it to help them explore. The route of their visit was decided by the participants as was the duration of the visit, although they were advised that a typical visit would be approximately 45 minutes with either app. Participants concluded the visit when they felt ready to do so. The researcher accompanied the visit but did not take part in the visit activities. Where necessary, typically if the participant/s became confused by the app, the researcher provided guidance and/or support on the use of the app to enable the visit to continue.

Figure 4-12 Geneva Emotion Wheel (Scherer, 2005)

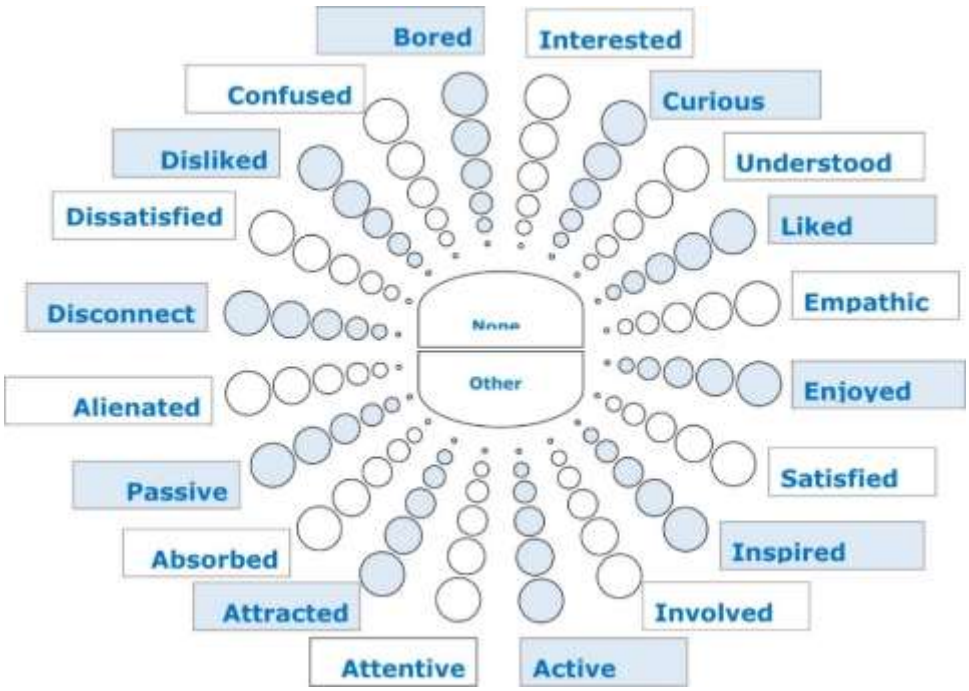


Figure 4-13 Visitor Engagement Wheel (Wilkinson, 2015, adapted from Scherer, 2005)

4 Post visit evaluation	Immediately after the visit participants met with the researcher at an indoor location, convenient to their finishing point, where they were asked to undertake two activities: completion of the post visit documentation and participation in the post visit interview.
4.1 Post visit documentation	The *Post Visit Questionnaire* uses 15 questions to collect a range of qualitative and quantitative data. Q1 revisits questions from the *Pre Visit Questionnaire* and asks participants to indicate movement in their interest in history generally and their interest and knowledge of Leicester history and the Cultural Quarter. A three step sliding Likert scale of 'not at all', 'a little', a lot' is used to collect quantitative data from these responses. Questions 2 – 10 use open questions with free text answers to explore in more detail how the participant believes that visiting the Cultural Quarter with the mobile phone app has affected their attitude towards the location with particular reference to personal thoughts, learning, interest and enjoyment. The third area explores the usefulness of the app itself. Participants are asked what they thought of using the app, what they liked, disliked, how it made the visit engaging what they would suggest to improve

	the app both in terms of general design and how it could make the visit more engaging. Q11 uses the System Usability Scale (SUS) (Brooke, 1996) to assess the overall usability of the app. Questions 12-15 explore the legacy of the visit in relation to both the location and the app by asking participants to confirm if they would visit the Cultural Quarter again, if they would recommend the Cultural Quarter to others to visit, if they would use the app again and if they would recommend using the app to others. Answers are limited to a yes/no response and a free text box for explanation of their choice. The participant's original *Geneva Emotion* and *Visitor Engagement Wheels* were returned to them and they repeated the exercise of indicating their level of emotion and engagement by adding post visit measures to each wheel. This data provides measures of movement in engagement and emotions for each participant.
4.2 Interview	The final part of the data collection is the semi-structured interview. Facilitated by the researcher with participants in the same groups they were in when they undertook the visit the researcher used a prepared discussion guide, the *Participant Post Visit Discussion Guide*, to facilitate discussion about the visit. The questions are similar to those used in the *Post Visit Questionnaire* allowing further exploration of each area and an opportunity to confirm participant statements and meaning as well as the researcher's own observations from the visit. Ten questions were used to broadly explore five areas. The first area focusses on the visit itself: how did they approach visiting the area with the app and how did they use the app as a guide. The second area focusses on how the app contributed to the engagement of participants in relation to personal knowledge, interest and enjoyment. The third area asks participants to consider what visiting the area without the app would have been like. The forth area focusses again on the visit and what the participants most and least liked about the experience. The final section invites suggestions for improving the app particularly with the view to making the visit

	experience more engaging. Interviews were recorded for later analysis by the researcher.
5 Process and Analyse Data	Data was processed and analysed. Results from these steps are presented in Appendix 4F.
5.1 Collate Quantitative Data	Quantitive data from the *Pre Visit Questionnaire*, the *Post Visit Questionnaire,* the *Geneva Emotion* and *Visitor Engagement Wheels* were digitally collated into Microsoft Excel spreadsheet and Microsoft Word documents for further analysis.. Interviews were recorded and listened to by the researcher as part of the analysis process
5.2 Code Qualitative Data	Qualitative data from the *Pre Visit Questionnaire* and the *Post Visit Questionnaire* were digitally collated into Microsoft Word documents Qualitative data was coded using thematic analysis principles, as described in chapter 3, to identify emerging themes within the data.
6: Present and Publish Results	The results of the study were presented to the Connected Communities Heritage Network Symposium in 2016 with a resulting academic paper (Wilkinson, 2016), details of which are in Appendix 4H.

4.3.3 Results

4.3.3.1 Visit Details

Visits occurred between August and December 2015 with variable weather conditions which may have affected visitor experience. No weather conditions were ideal and visits varied considerably from very hot to wet and cold. The summer sunshine made it a little tricky to read the screens, but not impossible. The very wet conditions could have impacted on the time people wanted to spend in the area, although all participants in these situations took the decision to continue with the visit, even when given the option to finish earlier. A total of 16 visits were conducted. Group sizes ranged from one to 19 although the typical group size was between two and four and larger groups split into smaller sets of between three and six people. Visit duration was typically 45 minutes to an hour. Participants was given complete freedom to take as long or as short a time as

they wanted for the visit. A number of participants undertook two visits in the same day. For some this resulted in them being rather tired and consequently less engaged with the second visit, although for others they found the second visit more interesting than the first. In each of these situations the Sounds of the Cultural was the first App to be used.

Date	Group Size	Group Relationship	App	Weather	Residence
12/8/15	3	Friends/family	SCQ	Hot, breezy in shade	Leicester
12/8/15	3	Friends/family	HS	Hot, breezy in shade	Leicester
14/8/15	1	Friend	SCQ	Consistent rain	Leicester
14/8/15	1	Friend	HS	Consistent rain	Leicester
21/8/15	2	Friends	SCQ	Hot and sunny	Leicester
21/8/15	2	Friends	HS	Hot and sunny	Leicester
22/8/15	2	Friends	SCQ	Very hot	Leicester
22/8/15	2	Friends	HS	Very hot	Leicester
27/8/15	2	Friends	SQC	Hot but turned cold	Leicester
27/8/15	2	Friends	HS	Hot but turned cold	Leicester
7/9/15	2	Family	SCQ	Cold but mainly dry	Leicester
7/9/15	2	Family	HS	Cold but mainly dry	Leicester
8/9/15	2	Family	SCQ	Cold	Leicester
12/11/15	10	Student Group	HS	Dry and pleasant	International
12/11/15	19	Student Group	SCQ	Dry and pleasant	International
17/11/15	6	Student Group	SCQ	Cold constant rain	International
26/11/15	5	Student Group	SCQ	Cold and wet	International
26/11/15	1	Student Group	HS	Cold and wet	International

	Hidden Stories	Sounds of the Cultural Quarter
Number of visit	8	10
Smallest group	1	1
Largest Group	12	19

Table 4-6 Visit information (Wilkinson, 2015)

4.3.3.2 Participant details

A total of 48 people took part in the study. 92% used the Sounds app, 52% used the Stories app and 44% used both apps. 60% of the participants were female, 40% male. 29% of the participants were local residents and 60% were from overseas. All ages ranges were represented the majority, 65%, being in the 22-35 age group.

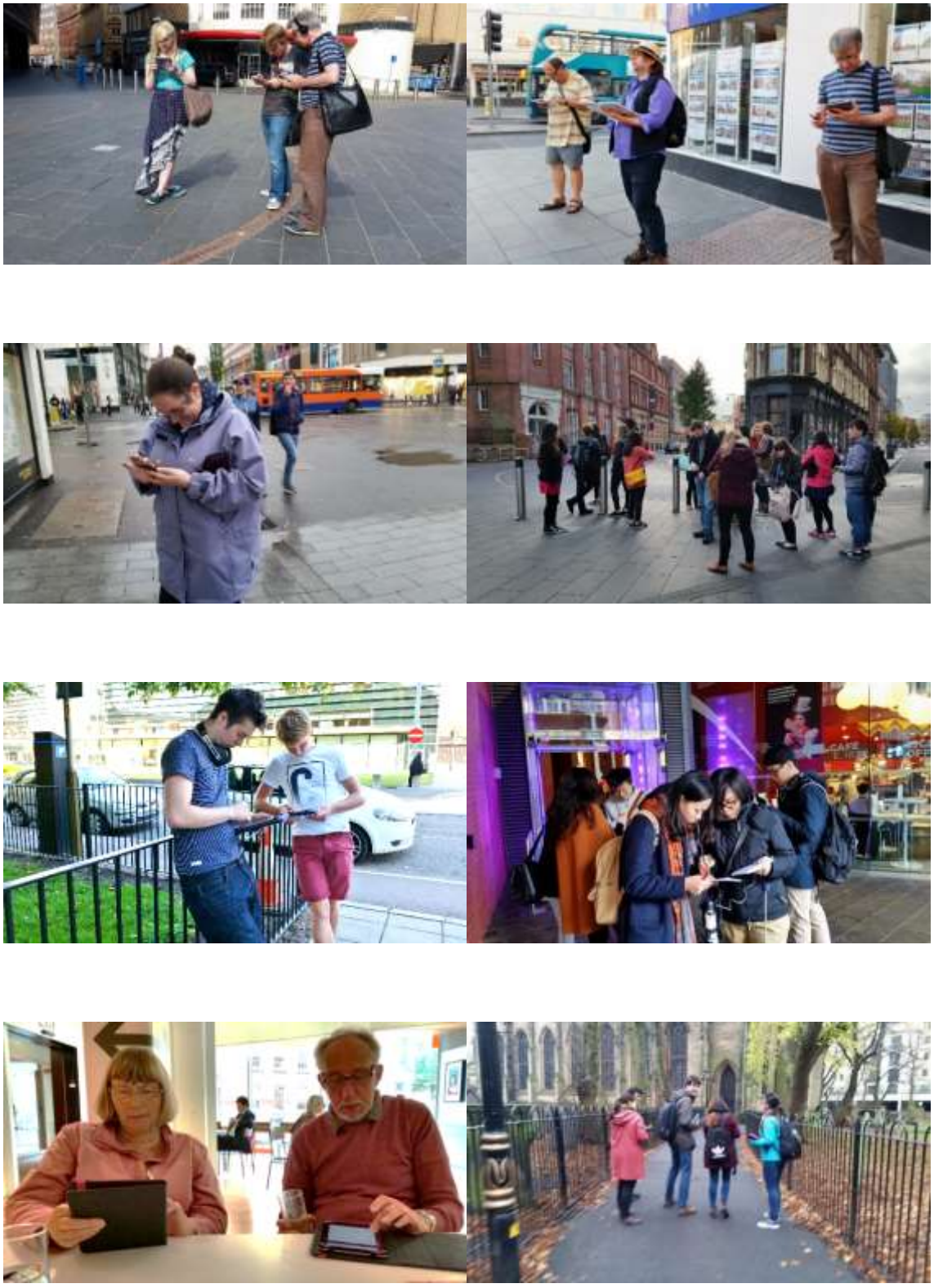


Figure 4-14 Visits (Wilkinson, 2015)

Category	All	SCQ	HS	Both
All	48	44	25	21
Sex – female	29	26	13	10
Sex – male	19	18	12	11
Age – 12-16	1	1	0	0
Age – 16-18	2	2	2	2
Age – 19-21	5	5	5	5
Age – 22-35	31	27	12	12
Age – 36-45	4	4	2	2
Age – 46-55	2	2	2	2
Age – 56-65	2	2	2	2
Residency – local	14	14	12	12
Residency – not local	34	30	13	9
Nationality – British	19	18	15	14
Nationality – Overseas*	29	26	10	7
* Chinese 9, American 2, Taiwanese 6, Dutch 2, Columbian 1, German 1, Greek 1, Hong Kong 1, Indian 1, Italian 1, Vietnamese 1, not given 3				

Table 4-7 Participant data (Wilkinson, 2015)

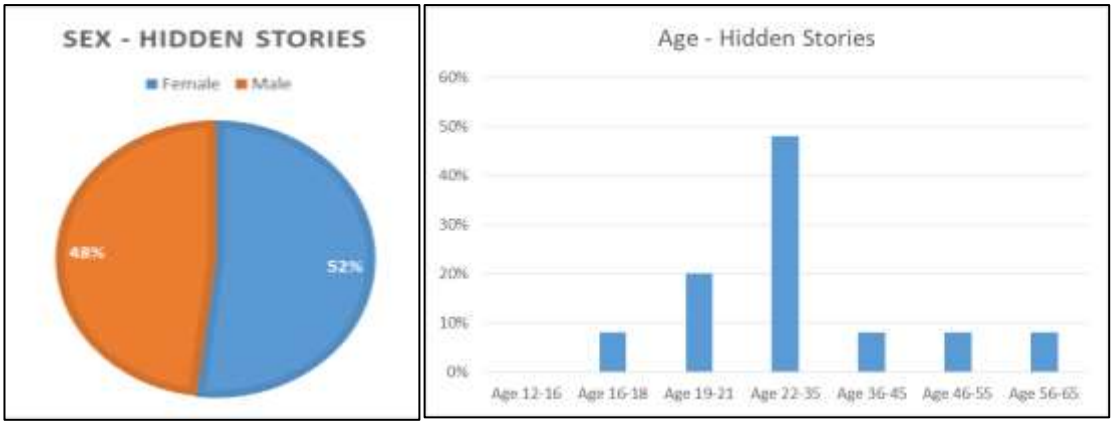


Figure 4-15 Stories participants (Wilkinson, 2015)

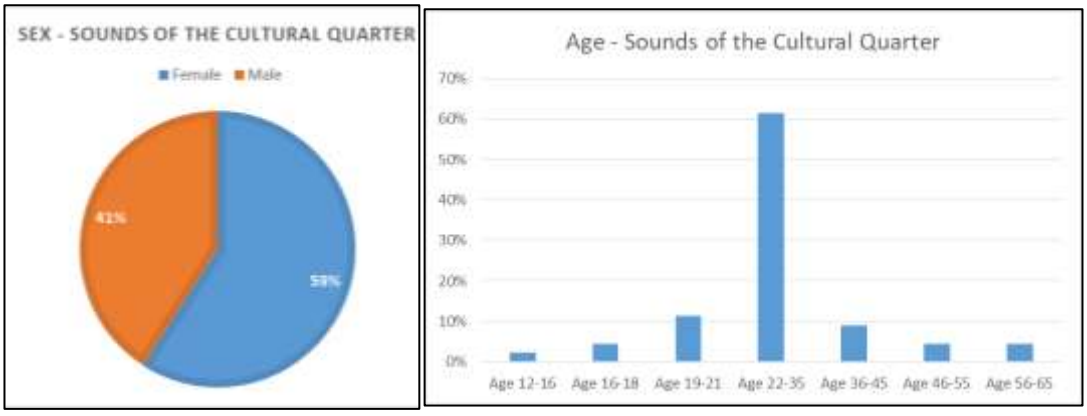


Figure 4-16 Sounds participant (Wilkinson, 2015)

4.3.3.3 Interest and knowledge acquisition

Hidden Stories How has the app increased your	Not at all	A little	A lot	Not at all	A little	A lot
• interest in history?	11	10	3	46%	42%	13%
• interest in local Leicester history?	7	12	5	29%	50%	21%
• knowledge of local Leicester history?	11	13	0	46%	54%	0%
• interest in the Cultural Quarter?	5	14	5	21%	58%	21%
• knowledge of the Cultural Quarter?	12	8	4	50%	33%	17%

Sounds of the Cultural Quarter How has the app increased your	Not at all	A little	A lot	Not at all	A little	A lot
• interest in history?	8	30	5	19%	70%	12%
• interest in local Leicester history?	4	25	15	9%	57%	34%
• knowledge of local Leicester history?	16	24	4	36%	55%	9%
• interest in the Cultural Quarter?	4	30	10	9%	68%	23%
• knowledge of the Cultural Quarter?	17	22	5	39%	50%	11%

Table 4-8 Impact on interest and knowledge (Wilkinson, 2015)

81% using *Sounds* and 54% using *Stories* reported an increase in their *interest in history* however only a little over 12% said that their interest had increased 'a lot' and 46% of those using *Stories* said that the app had not increased their *interest in history* at all. It should be noted that most participants were already significantly interested in history so it might be unrealistic to expect much increase in their current levels from this experience.

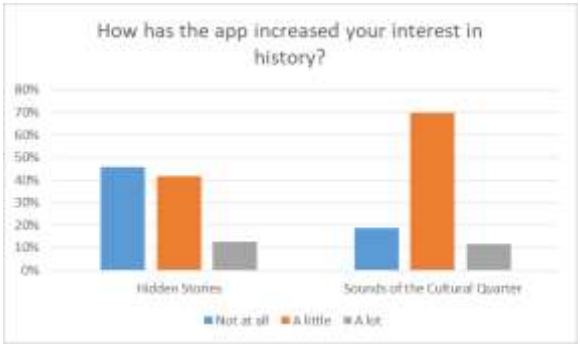


Figure 4-17 Interest in history (Wilkinson, 2015)

4.3.4 Increased interest in Leicester history

91% of those using *Sounds* indicated an increase of *interest in local Leicester history* with 34% saying it had increased 'a lot'. 71% of those using *Stories* reported an increase in *interest*, with 21% reporting this as 'a lot'.

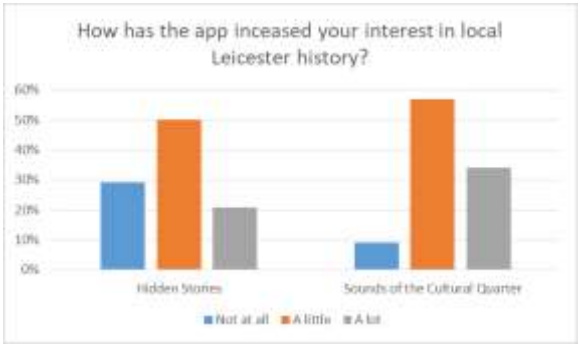


Figure 4-18 Interest in local Leicester history (Wilkinson, 2015)

64% using *Sounds* reported an increase in *knowledge of local Leicester history* although only 9% reported this as high. 46% of those using *Stories* reported no change in their *knowledge* with 54% saying that they had learned 'a little'. No one using this app said they had learned 'a lot'.

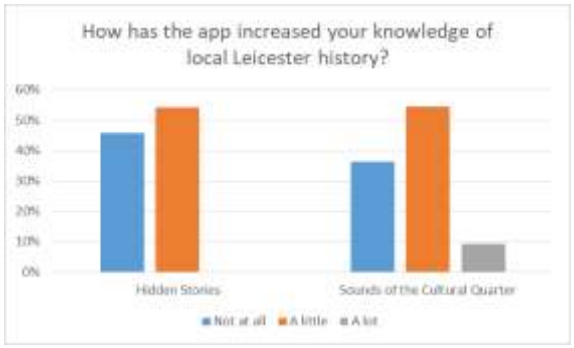


Figure 4-19 Knowledge of local Leicester history (Wilkinson, 2015)

91% of those using *Sounds* and 79% of those using *Stories* reported an increase in their level of *interest in the Cultural Quarter*, although most said it had increased 'a little' with just over 21% saying it had increased 'a lot'

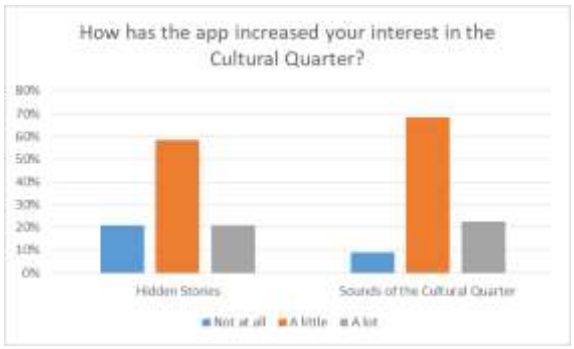


Figure 4-20 Knowledge of Cultural Quarter (Wilkinson, 2015)

61% using *Sounds* and 50% using *Stories* reported an increase in their *knowledge of the Cultural Quarter* with only 11% and 17% respectively saying that their knowledge had increased 'a lot'.

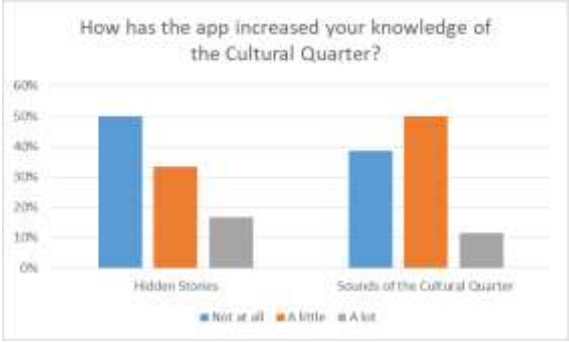


Figure 4-21 Knowledge of Cultural Quarter (Wilkinson, 2015)

4.3.4.1 Future Engagement

89% of those using *Sounds* and 100% of those using *Stories* said that they would visit the Cultural Quarter again. More than 90% of participants said that they would recommend the area to others although the associated commentary would suggest that the attraction was more to do with the leisure facilities such as the bars, theatre and cinema than the heritage or the apps.

53% would use the *Sounds* app again and 55% would use *Stories* again. 62% would recommend *Sounds* to others and 68% would recommend *Stories* to others. Less than 10% said they would use either app frequently, however, it is worth noting that the nature of these apps means that they are intended more for a one off experience than repeated usage.

Hidden Stories As a result of using the app will you	Yes	No	Maybe	Yes	No	Maybe
• visit the CQ again	23	0	0	100%	0%	0%
• recommend visiting the CQ to others	21	0	2	91%	0%	9%
• recommend the App to others	13	5	1	68%	26%	5%
• use the App again	11	8	1	55%	40%	5%

Sounds of the Cultural Quarter As a result of using the app will you	Yes	No	Maybe	Yes	No	Maybe
• visit the CQ again	39	4	1	89%	9%	2%
• recommend visiting the CQ to others	38	1	3	90%	2%	7%
• recommend the App to others	26	10	6	62%	24%	14%
• use the App again	23	16	4	53%	37%	9%

Table 4-9 Future engagement with Cultural Quarter and/or apps (Wilkinson, 2015)

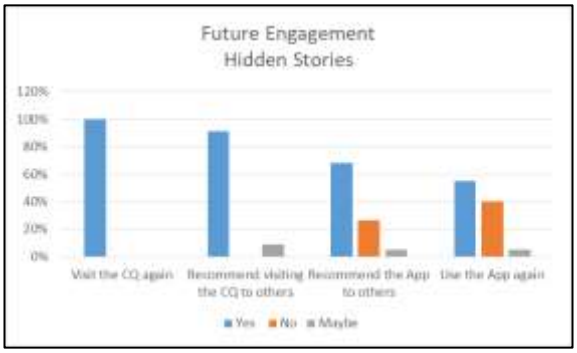


Figure 4-22 Stories app future engagement (Wilkinson, 2015)

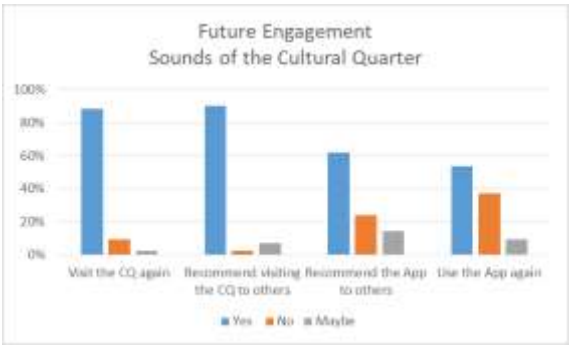


Figure 4-23 Sounds app future engagement (Wilkinson, 2015)

4.3.4.2 Usability

The System Usability Scale (SUS) was used to measure participant perceptions of the usability of each app. To identify the SUS score participants are asked to rate 10 items on a 1-5 scale. After calculating average scores for each item the overall SUS usability score is obtained by using the following formula:

$$2.5 * \sum \frac{5}{i} = 1\big((S_{2i} - 1) + (5 - S_{2i})\big)$$

Where S1 to S10 are the average scores for item 1 to 10 of the scale. SUS scores range from 0 to 100 with scores of less than 50 considered unacceptable and scores of 70 or over acceptable. Scores between 50 and 70 are regarded as marginal. *Sounds* scored

65.70 and *Stories* scored 68.23 placing both apps in the high marginal range. The more negative features of the apps were considered to be the frequency with which participants felt they would use the app and how well the various functions were integrated.

Hidden Stories	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I think I would like to use the App frequently	28%	**40%**	24%	8%	0%
I found the App unnecessarily complex	36%	**44%**	4%	16%	0%
I thought the App was easy to use	8%	8%	12%	**40%**	32%
I think I would need the support of a technical person to be able to use this App	**52%**	32%	4%	8%	0%
I found the various functions in this App well integrated	8%	12%	36%	**36%**	8%
I thought there was too much inconsistency in this App	32%	**36%**	20%	8%	4%
I would imagine that most people will learn to use this App very quickly	4%	8%	8%	**52%**	28%
I found the App very cumbersome to use	**44%**	32%	12%	8%	4%
I felt very confident using the App	0%	4%	28%	40%	28%
I needed to learn a lot before I could get going with this App	36%	**48%**	8%	4%	4%
I will look for other heritage Apps that I can use in other locations	4%	16%	28%	**44%**	8%

Table 4-10 Stories app usability (Wilkinson, 2015)

Sounds of the Cultural Quarter	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I think I would like to use the App frequently	16%	34%	**43%**	7%	0%
I found the App unnecessarily complex	**36%**	27%	27%	7%	2%
I thought the App was easy to use	0%	9%	9%	**50%**	32%
I think I would need the support of a technical person to be able to use this App	**59%**	16%	16%	7%	2%
I found the various functions in this App well integrated	5%	27%	**41%**	23%	2%
I thought there was too much inconsistency in this App	18%	**41%**	18%	18%	5%
I would imagine that most people will learn to use this App very quickly	5%	7%	7%	**57%**	25%
I found the App very cumbersome to use	20%	**36%**	30%	11%	0%
I felt very confident using the App	0%	9%	18%	**48%**	20%
I needed to learn a lot before I could get going with this App	**36%**	34%	11%	18%	0%
I will look for other heritage Apps that I can use in other locations	0%	16%	34%	**34%**	16%

Table 4-11 Sounds app usability (Wilkinson, 2015)

4.3.4.3 Hidden Stories Geneva EMOTION Wheel

Participants recorded the intensity with which they felt certain **emotions** before and after their visit to the Cultural Quarter. Table 4-12 page 4-146 shows the level of movement for each of emotions, for example the figures for 'Interest' indicate that 46% of participants recorded an increase in the intensity with which they felt interest, 29% reported a decrease and 25% reported not change. Figure 4-24 page 4-148 summarises the movement in each emotion.

No change- majority response*:* 13 emotions have 'no change' as the majority response. The range 54% to 75%, These emotions are (in descending order) 'guilt' 75%, 'shame'

75%, ‘disgust’ 71%, ‘hate’ 71%, ‘regret’ 71%, ‘anger’ 63%, ‘compassion’ 63%, ‘contempt’ 63%, ‘relief’ 63%, ‘admiration’ 58%, ‘pride’ 58%, ‘fear’ 54%, ‘love’ 54%.

No movement: Three 3 emotions have ‘no change’ as the largest but not the majority response. These emotions are ‘sadness’ 50%, ‘pleasure’ 50% and ‘joy’ 42%.

Positive movement. One emotion showed a majority response in positive movement with an increase in intensity reported for ‘amusement’ 54%. Two emotions showed a significant increase in intensity: ‘interest’ 46% and ‘admiration’ 43%. ‘Contentment’ had an equal figure of 42% for both no change and positive increase.

Negative movement: One emotion has ‘negative movement’ as a majority response indicating a decrease in intensity, ‘disappointment’ 38%.

Hidden Stories GEW Movement in %	**Negative**	**No change**	**Positive**
Interest	29	25	**46**
Amusement	17	29	**54**
Pride	13	**58**	29
Joy	33	**42**	25
Pleasure	8	**50**	42
Contentment	17	**42**	**42**
Love	17	**54**	29
Admiration	13	**58**	29
Relief	13	**63**	25
Compassion	8	**63**	29
Sadness	13	**50**	38
Guilt	13	**75**	13
Regret	13	**71**	17
Shame	8	**75**	17
Disappointment	**38**	33	29
Fear	29	**54**	17
Disgust	13	**71**	17
Contempt	21	**63**	17
Hate	8	**71**	21
Anger	13	**63**	25

Bold indicates the highest result in a category
Green indicates the highest but not the majority in that category

Table 4-12 Stories app results (Wilkinson, 2015)

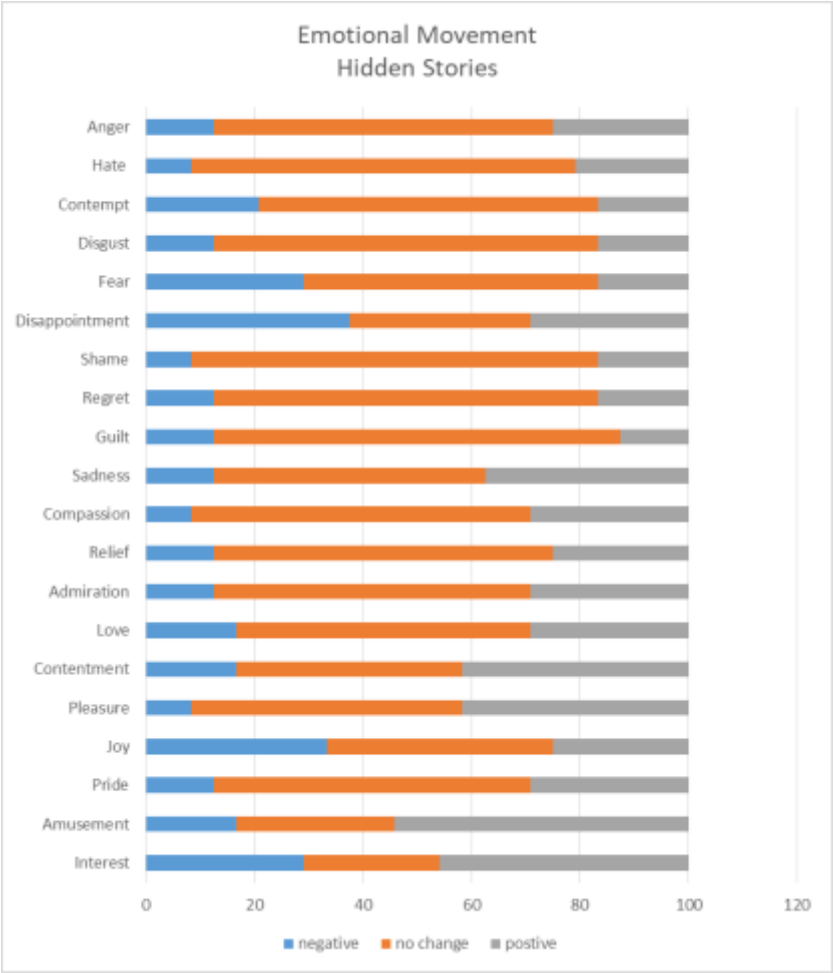


Figure 4-24 Stories app movement (Wilkinson, 2015)

4.3.4.4 Sounds of the Cultural Quarter Geneva EMOTION Wheel

Table 4-13 page 4-149 shows the level of movement for each of emotions, for example the figures for 'Interest' indicate that 58% of participants recorded an increase in the intensity with which they felt interest, 23% reported no change and 19% reported a decrease. Figure 4-25 page 150 summarises the movement in each emotion.

No change – majority response: 13 emotions have a 'no change' as the majority response. The range is 51% to 74%. These emotions are (in descending order) 'anger' 74%, 'hate' 74%, 'shame' 72%, 'disgust' 70%, guilt 70%, 'contempt' 67%, 'regret' 65% , 'compassion' 63%, 'fear' 60%, 'sadness' 58%, 'pride' 56%, 'relief' 56%, 'love' 51%.

No change: Two emotions have 'no change' as the largest but not the majority response. These emotions are 'joy' 47% and 'disappointment' 47%.

Positive movement: Two emotions have 'positive movement' as a majority response with an increase in intensity reported for 'interest' 58% and 'pleasure' 56%. A further two emotions show a significant increase in intensity: 'amusement' 47% and 'admiration' 44%. 'Contentment' had an equal figure of 42% for both 'no change' and 'positive movement.

The majority of emotions showing no change were predominantly the negative emotions whereas those emotions showing an increase in intensity were positive emotions. Although the majority of emotions largely recorded no change as the highest response from participants where movement did occur this was usually an increase in intensity. The exceptions to this were 'fear' and 'contempt' which both registered a slight decrease in intensity

Sounds of the Cultural Quarter GEW Movement in %	Negative	No change	Positive
Interest	19	23	**58**
Amusement	19	35	**47**
Pride	19	**56**	26
Joy	19	**47**	35
Pleasure	14	30	**56**
Contentment	16	**42**	**42**
Love	14	**51**	35
Admiration	16	40	**44**
Relief	9	**56**	35
Compassion	7	**63**	30
Sadness	7	**58**	35
Guilt	7	**70**	23
Regret	7	**65**	28
Shame	7	**72**	21
Disappointment	19	**47**	35
Fear	16	**60**	23
Disgust	12	**70**	19
Contempt	14	**67**	19
Hate	9	**74**	16
Anger	12	**74**	14

Bold indicates the highest result in a category
Green indicates the highest but not the majority in that category

Table 4-13 Sounds app results (Wilkinson, 2015)

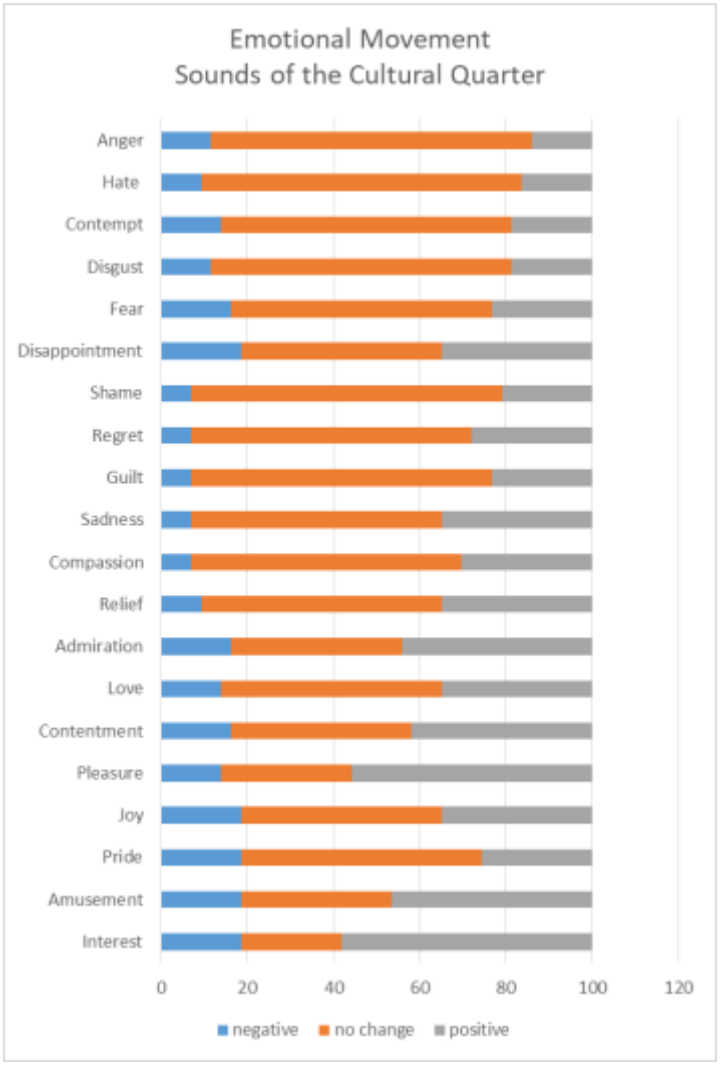


Figure 4-25 Sounds app movement (Wilkinson, 2015)

4.3.4.5 Hidden Stories Visitor ENGAGEMENT Wheel

Table 4-14 page 5-151 shows the level of movement for each engagement state, for example the figures for 'Interested' indicate that 54% of participants recorded an increase in the intensity with which they felt interested, 29% reported a decrease and 17% reported no change. Figure 4-26 page 4-152 summarises the movement in each engagement state.

Positive movement – majority response: Seven of the engagement descriptors have 'positive movement' as a majority response. These descriptors are, in decreasing order, 'liked' 67%, 'absorbed' 63%, 'satisfied' 58%, 'understanding' 58%, 'interested' 54%, 'enjoyed' 54% and 'involved' 54%.

Positive movement – largest response: Two descriptors have 'positive movement' as the largest response. These descriptors are 'curious' 50% and 'attracted' 42%.

No change – largest response: 11 descriptors have 'no change' a largest response. These descriptors are, in decreasing order, 'bored' 50%, 'dislike' 50%, 'dissatisfied' 50%, 'disconnected' 50%, 'alienated' 50%, 'attentive' 50%, 'inspired' 50%, 'empathetic' 50%, 'active' 46%, 'passive' 42% and 'confused' 38%. 'Passive' recorded an equal score of 42% for both no change and a decrease in intensity.

Hidden Stories Engagement Wheel Movement in %	**negative**	**no change**	**positive**
Interested	29	17	**54**
Curious	29	21	**50**
Understanding	8	33	**58**
Liked	17	17	**67**
Empathetic	8	**50**	42
Enjoyed	17	29	**54**
Satisfied	13	29	**58**
Inspired	8	**50**	42
Involved	4	42	**54**
Active	21	**46**	33
Attentive	17	**50**	33
Attracted	25	33	**42**
Asorbed	8	29	**63**
Passive	**42**	**42**	17
Alienated	33	**50**	17
Disconnected	33	**50**	17
Dissaisfied	17	**50**	33
Dislike	25	**50**	25
Confused	29	**38**	33
Bored	21	**50**	29

Bold indicates the highest result in a category
Green indicates the highest but not the majority in that category

Table 4-14 Stories app results (Wilkinson, 2015)

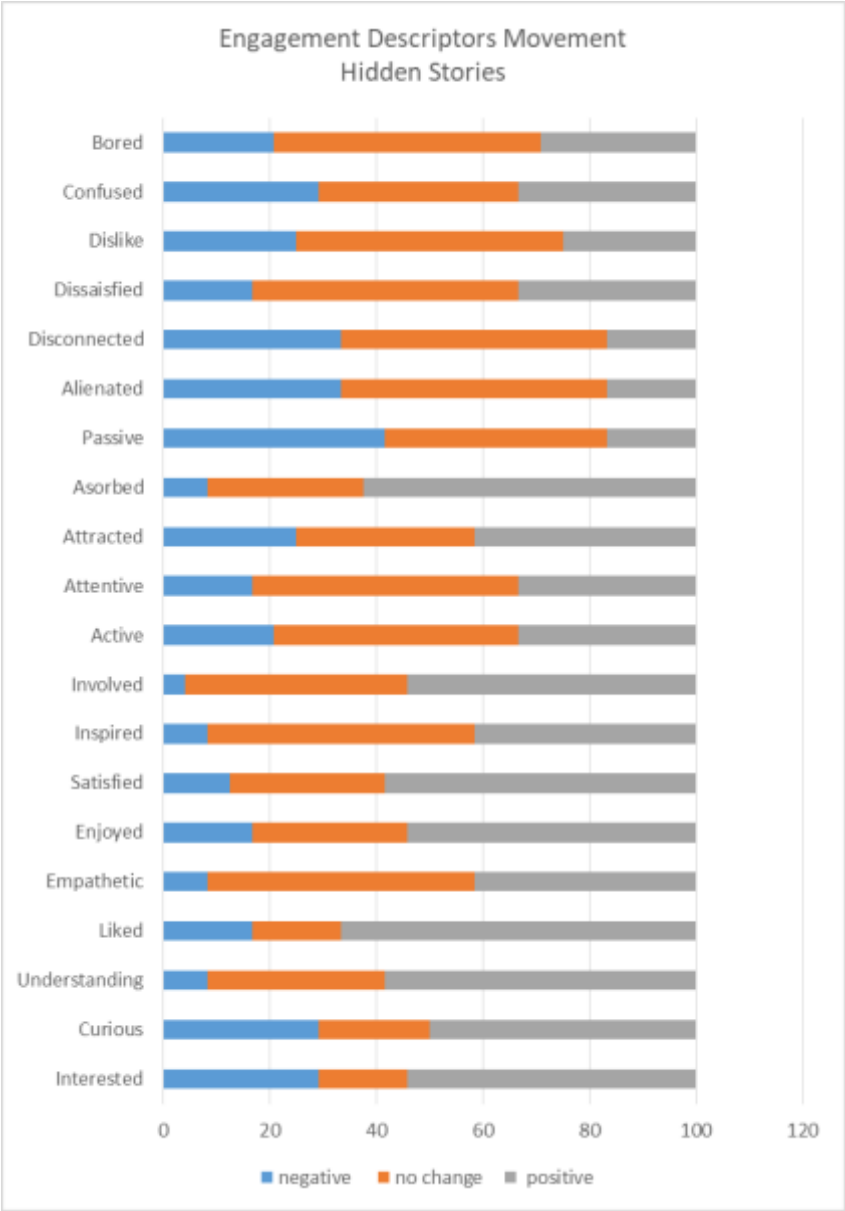


Figure 4-26 Stories app movement (Wilkinson, 2015)

4.3.4.6 Sounds of the Cultural Quarter Visitor ENGAGEMENT Wheel

Table 4-15 page 5-153 shows the level of movement for each engagement state, for example the figures for 'Interested' indicate that 48% of participants recorded an increase in the intensity with which they felt interested, 33% reported no change and 19% reported a decrease. Figure 4-27 page 154 summarises the movement in each engagement state.

Sound of the Cultural Quarter Engagement Wheel Movement in %	negative	no change	positive
Interested	19	33	48
Curious	33	26	40
Understanding	21	26	**52**
Liked	14	36	50
Empathetic	14	48	38
Enjoyed	26	17	**57**
Satisfied	19	36	**45**
Inspired	19	38	**43**
Involved	19	31	**50**
Active	17	45	38
Attentive	19	36	45
Attracted	24	33	43
Asorbed	17	31	**52**
Passive	24	36	40
Alienated	26	**52**	21
Disconnected	26	38	36
Dissaisfied	17	48	36
Dislike	14	**52**	33
Confused	31	21	48
Bored	14	33	**52**

Bold indicates the highest result in a category
Green indicates the highest but not the majority in that category

Table 4-15 Sounds app engagement (Wilkinson, 2015)

Positive movement – majority response: Four of the engagement descriptors have 'positive movement' as a majority response. These descriptors in descending order are 'enjoyed' 57%, 'understanding' 52%, 'absorbed' 52% and 'bored' 52%.

Positive movement – largest response. Ten descriptors have 'positive movement' as the largest response. These descriptors are, in decreasing order, 'liked' 50%, 'involved' 50%, 'interested' 48%, 'confused' 48%, 'satisfied' 45%, 'attentive'45%, 'attracted' 43%, 'inspired' 43%, 'curious' 40%, and 'passive' 40%.

No change – majority response. Two descriptors have 'no change' as the majority response. These are 'alienated' 52% and 'dislike' 52%.

No movement – largest response. Four descriptors have 'no movement' as a largest response. These descriptors are, in decreasing order, 'empathetic' 48%, 'dissatisfied' 48%, 'active' 45%, and 'disconnected' 38%.

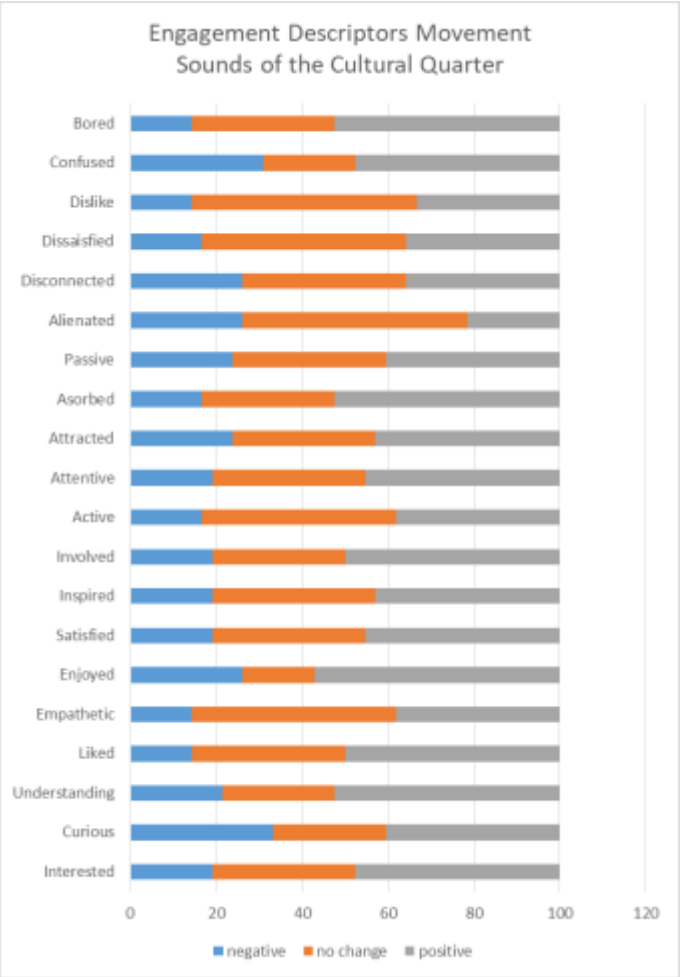


Figure 4-27 Sounds app movement (Wilkinson, 2015)

The scores for both increase and decreasing intensity are quite high and whilst the overall results provide a picture of the largest numbers of response these are rarely the majority and significant numbers of participants expressed change in one direction or the other. For example, whilst 50% of the HS participants recorded no change in the intensity with which they experienced 'alienation' and 'disconnection', 33% reported a decrease.

4.3.5 Statistical Validity

To confirm the validity of the results of the emotion and engagement wheels a paired t-test was conducted on the before and after scores of each emotion/engagement state to test the null hypothesis of each result. The resulting p-values are displayed in tables 4-16 to 4-19 pp 4-155/6. These tests show a mixed picture regarding statistical

confidence with strong evidence that the apps have led to changes regarding some emotions and engagement states, but insufficient evidence to have confidence in other results. Overall the Sounds app appears to out-perform the Stories app in terms of impact on either visitor engagement or emotion.

Hidden Stories – GEW: EMOTION (full data set)			
Strong evidence that, on average, the IDM has led to changes in these emotions		Insufficient evidence that, on average, the IDM has led to changes in these emotions	
Emotion	p-value	Emotion	p-value
Pleasure	0.03	Interest	0.39
Compassion	0.05	Amusement	0.15
Sadness	0.06	Pride	0.10
		Joy	0.52
		Contentment	0.36
		Love	0.39
		Admiration	0.16
		Relief	0.22
		Guilt	0.52
		Regret	0.31
		Shame	0.15
		Disappointment	1.00
		Fear	0.55
		Disgust	0.27
		Contempt	0.70
		Hate	0.13
		Anger	0.23

Table 4-16 Stories app EMOTION statistics (Wilkinson, 2018)

Hidden Stories – VEW: ENGAGEMENT (full data set)			
Strong evidence that, on average, the IDM has led to changes in these states of engagement		Insufficient evidence that, on average, the IDM has led to changes in these states of engagement	
State	p-value	State	p-value
Understanding	0.00	Interest	0.40
Like	0.02	Curious	0.24
Empathetic	0.00	Enjoy	0.22
Satisfied	0.02	Inspired	0.10
Involved	0.01	Active	0.13
Absorbed	0.00	Attentive	0.31
		Attracted	0.39
		Passive	0.70
		Alienated	0.92
		Disconnected	0.49
		Dissatisfied	0.12
		Dislike	0.36
		Confused	0.19
		Bored	0.11

Table 4-17 Stories app ENGAGEMENT Statistics (Wilkinson, 2018)

Sounds of the Cultural Quarter – GEW EMOTION (full data set)			
Strong evidence that, on average, the IDM has led to changes in these emotions		Insufficient evidence that, on average, the IDM has led to changes in these emotions	
Emotion	p-value	Emotion	p-value
Interest	0.00	Pride	0.42
Amusement	0.02	Contentment	0.08
Joy	0.04	Love	0.06
Pleasure	0.00	Regret	0.06
Admiration	0.01	Shame	0.06
Relief	0.00	Disappointment	0.12
Compassion	0.01	Fear	0.43
Sadness	0.01	Disgust	0.74
Guilt	0.04	Contempt	0.88
		Hate	0.20

Table 4-18 Sounds app EMOTION Statistics (Wilkinson, 2018)

Sound of the Cultural Quarter – VEW: ENGAGEMENT (full data set)			
Strong evidence that, on average, the IDM has led to changes in these states of engagement		Insufficient evidence that, on average, the IDM has led to changes in these states of engagement	
State	p-value	State	p-value
Curious	0.03	Interest	0.09
Understanding	0.01	Satisfied	0.09
Like	0.00	Inspired	0.08
Empathetic	0.00	Active	0.18
Enjoy	0.01	Attracted	0.08
Involved	0.02	Alienated	0.93
Attentive	0.04	Disconnected	0.21
Absorbed	0.01	Confused	0.15
Passive	0.04		
Dissatisfied	0.03		
Dislike	0.04		
Bored	0.00		

Table 4-19 Sounds app ENGAGEMENT Statistics (Wilkinson, 2018)

The paired t-test confirms that there is strong evidence that both apps were able to change some of the emotional and engagement states of the participants, however this impact is limited and was more evident across the whole data set, which includes a large number of overseas students, and was not replicated within the data from the UK participants.

4.3.5.1 Hidden Stories: themes and codes

Data from the free text questions on the Post Visit Form were collated and coded to identify themes. A total of 188 codes were created, then allocated into three key

themes, 14 sub themes and 35 core themes (table 4-120 page 4-157). The three overarching themes have been defined from the data: 'The Visitor', 'The Connection' and 'The Place'. The full data set of codes, themes and participant comments is available in Appendix 4G. A summary of the codes and themes is now presented with sample participant comment to illustrate the data collected.

OT1 The Visitor	T1 Interaction with the location	ST Following a route
		ST Looking around
		ST Exploring
	T2 Doing a task	ST Following a narrative (route/story/task)
		ST Discovering
		ST Thinking
		ST Reading and walking
	T3 Social activity	ST Discussing
		ST Collaborating
		ST Sharing
	T4 Personal processing	ST Cognitive – learning
		ST Cognitive – understanding
		ST Emotive – empathising
		ST Emotive - enjoying
		ST Changing perspective
	T5 Interaction with the technology	Personalisation
OT2 The Connection	T1 Proximity	Proximity
	T2 Sufficient knowledge	Sufficient knowledge and understanding of place content
	T3 Creating connection	Stories connecting with the place
		Stories connecting with the people
		Authenticity
	T4 Engaging with the location	Being curious
		Being attracted
		Being absorbed
		Legacy relationship – returning
		Legacy relationship – wanting to learn more
		Being inspired
	T5 Stimulus and media	Audio
		Visual
		The text
		The story
	T6 Non-Connection	Generally not helpful
		Technical barriers
		Actually distracting
OT3 The	T1 Physical	Buildings
		Present ambiance
	T2 Temporal	Previous usage
	T3 Social – the place in community	Social – the place in community

Table 4-20 Stories app themes and codes (Wilkinson, 2018)

4.3.5.1.1 Stories key theme 1 visitor

Key Theme 1 relates to the visitor and includes sub themes which relate to visitor behaviours and activities which emerged from the codes.

SUB THEME 1.1 Interaction With The Location		
Core Theme	Description (from codes)	Participant Comments
CT110 Interaction with the location	People enjoyed being lost in the space	*"Getting lost in the Quarter and the silence of the church/cemetery"*
CT111 Following a route	People like walking the route	*Yes – It was really interesting and entertaining to walk around the different routes."*
CT112 Looking around	The stories made people look at their surroundings which they found fun and engaging. It was good to see buildings in their context	*"The Poetry story of the App encouraged me to look and see…"* *"Gave me a reason to look around and wonder how things used to be"*
CT113 Exploring	People liked exploring new territory and having an adventure. The app gave a reason to wander around	*"…liked how the app took me on a walk around this."*

SUB THEME 1.2 Doing a Task		
Core Theme	Description (from codes)	Participant Comments
CT120 Doing a task	People were motivated to compete all the stories and liked the feeling they were having an adventure. The stories provide a motivation and a reason for the visit	*"I'd be interested in walking some of the other routes also"* *"I would like to listen to more stories"*
CT121 Following a narrative (route/story/task)	Following the stories provided a route and a task. The stories acted as a guide around the area.	*"It set out a way to walk through the area. It once or twice referred to the surroundings. The way the story was written – like a novel or short story – make it very engaging and made the reader empathetic with the protagonist."* *"helped to guide me around the area, taught me about the past while I explored"*
CT122 Discovering	The stories helped people to look at the surroundings in a new light – noticing things not seen before	*"The author of Marginalia made me think about Merrick, Graffiti and City life in new ways."* *"The old buildings and the church in between them – even though I went to the Cultural Quarter before, I had never noticed this church. Due to the app, I realised how but the Cultural Quarter actually is."* *"… have the stories bring you attention to different features of your surroundings."*
CT123 Thinking	People enjoyed working things out and remembering from the past	*"Walking around just taking it all in. App helped me to see the buildings in their context, think about the different life-stories that were in them."* *"Looking and seeing and pondering and trying to work out the meaning of the poetry."*
124 Reading and walking	Reading and walking was an enjoyable task and people liked being outside	*"I enjoyed reading through some of the stories, and walking around the route."* *"It was also different to be reading outside in the city as I usually do so at home."*

SUB THEME 1.3 Social Activity		
Core Theme	Description (from codes)	Participant Comments
CT130 Social activity	People like being with friends	*"Hanging out with my classmates on the cemetery and going inside an old factory's courtyard."*
CT131 Discussing	The app encouraged people to discuss the stories and the buildings	*"I enjoyed …discussions about buildings and what the poem we used may be referring to."*
CT132 Collaborating	People enjoyed discussing stories and collaborating with others in the group	*"Engaging with 'companions in 'performing' 'The Love of Something' play."*
CT133 Sharing	People read the stories out to each other	*"Reading out the texts to each other in a theatrical manner was fun."*

Table 4-21 Stories app key theme 1 (Wilkinson, 2018)

4.3.5.1.2 Stories key theme 2 connection

Key Theme 2 relates to the connection between the visitor and the location and includes sub themes which emerged from the codes relating to the way in which the app is linking the visitor to the location as well as the visitors' reaction to the experience provided by the Hidden Stories mobile phone app.

SUB THEME 2.1 Proximity		
Core Theme	Description (from codes)	Participant Comments
210 Proximity	Direct connection between the location and the app was important in providing context and supporting understanding.	*"The story and when it actually referred to the streets I was walking through. This was surprising because most of the times I got lost and the story and the area didn't match. I enjoyed looking at the beautiful buildings (when not having to read)."* *"It was interesting to read something related to where we were standing, and have the stories bring you attention to different features of your surroundings"* *"Clearer explanations of how the locations related to the stores (why did we walk to this particular street corner?). Pictures of the area please!"* *"Could have more information about why these stories were in and how they connected to the city"* *"Some images perhaps, old photos showing buildings back then, where the story is set. Bit more information about the buildings would be great for me"*

SUB THEME 2.2 Sufficient knowledge and understanding of place content		
Core Theme	Description (from codes)	Participant Comments
220 Sufficient knowledge and understanding of place content	Lack of information limited people's learning and understanding	*"(I didn't actually learn much from this as the poem used did not really specify what we were looking for."* *"Apart from this the app hasn't taught me a lot about the Cultural Quarter specifically, also not providing extra information for those who are interested."* *"Clearer info about what buildings I am looking at each chapter. Would like more information like short history of buildings and some sounds"*

SUB THEME 2.3 Creating Connection		
Core Theme	Description (from codes)	Participant Comments
230 Creating connection	The stories brought things to life and people connected with the characters.	*"Immigrant past, industrial area. Learned about the area a bit. Learned about the different stages of some buildings and the designs. Didn't know/ever thought about Ugandan immigrants – unusual community ie: not a wave of imm. I knew about. Felt that it helped me empathise with the man in the typewriter story – vivid contract of rainy hopeless frustrating Leicester and warm beautiful vibrant Uganda."* *"I used the longest story trail and saw this area of Leicester through someone else's eyes. The author isn't from here but obviously engages with the area and shares that very well. It was fantastic to link Joseph Merrick with the area in such a vibrant way and to suggest that he could have a rehabilitation like Richard III was – a very good point"* *"I liked learning a real story from someone who worked in the area and has memory of it from the past."*

231 Stories connecting with the place	The stories connected visitors to the place, although this was limited/reduced when the physical location didn't match the story.	*"Even though the hidden stories is fictional – by engaging the imagination in the area – whether familiar or not does meme what to find out more about what the writer is saying"* *"Some stories were interesting, albeit very different, and it was interesting to match the locations mentioned to what we could see."* *"Hard to understand and the relation to and exact events from history. It doesn't correspond with the environment enough to understand the significance of walking a specific route."* *"The poem was confusing, wasn't obviously linked to buildings. Typewriter interesting but not (mostly) about the Cultural Quarter"* *"I didn't see the connection between the areas and the stories. Why I have to come to a specific place and read a chapter? I am not willing to come to a place and read a long story that has nothing related to it."*
232 Stories connecting with the people	People were interested in the lives of ordinary people and connected with them through the story	*"Interesting, liked learning about immigrant life in the area and the hopelessness of the workers."* *"I learned about personal stories of very different people. It teaches how diverse the population of Leicester was and is"* *"Some actual story of the building could make it more interesting. If I had the choice to hear some of the story of the actual workers, for example, I would have felt more engaged"*

SUB THEME 2.4 Engaging with the location		
Core Theme	Description (from codes)	Participant Comments
240 Engaging with the location	The app helped to engage with the location	*"Walking around just taking it all in. App helped me to see the buildings in their context, think about the different life-stories that were in them"*
241 Being curious	The app triggered curiosity	*"I'm feeling more curious about visiting it better. It's an inspiring area of the city and I will certainly go back to explore it more."*
242 Being attracted	Visitors were attracted by the interesting buildings	*"The CQ is a really interesting…area. The contrast between the modern architecture and the old.* *Loved looking at the architecture about the shop fronts. Loads of different buildings through the ages."*
243 Being absorbed	The app provided an absorbing experience	*"I did enjoy the poetry of 'The Crow'. It was less about the place and more about the experience"*
244 Legacy relationship – returning	People expressed a desire to return to the area	*"I'm feeling more curious about visiting it better. It's an inspiring area of the city and I will certainly go back to explore it more.2*
245 Legacy relationship – wanting to learn more	People were interested in learning more about the area	*"my interest to explore the history of the area has increased)"*
246 Being inspired	People were inspired to write poetry	*"I would like to consider as an activity and writing poetry as I walk around Leicester"*

SUB THEME 2.5 Stimulus and media		
Core Theme	Description (from codes)	Participant Comments
250 Stimulus and media	Novel concept – but more games would be good	*"More stories, poems, puzzles, mysteries etc"*
251 Audio	HS would benefit from more audio content	*"Highly recommend to have a talking Audio!!!"* *"Texts should be read out!"* *"Add audio versions of the texts."*

252 Visual	Map was interesting and nicely presented. The layout, design and animation were broadly liked by people, although some elements were less succesful	*"The map and layout were lovely and some of the stories were very interesting"* *"The way that the app show the information is like someone typing the story to us. Funny hand-painted map"* *"The illustrations, the creative-poetic stories, the layout and division into map/author/story, the different and creative use of typography in the texts"* *"I liked that there were some font of the text that were moving on the screen. It looked like you had an actual typewriter in front of you"* *"Colours sometimes made reading impossible/tiring"*
253 The text	The quality of the writing was popular	*"The author's description of things was very evocative – the 'steel rib cage of the Curve'"*
254 The Story	The variety of story telling techniques was well regarded and the stories were considered interesting although some stories were too long and overly complex	*"Different approaches to story telling ie: play, story"* *"Interesting, if obscure poem"* *"The length of the story we read [Imperial Typewriter] was just right but others were too long, complex or fragmented to be as engaging as this one."* *"too long texts! Some texts were incomprehensible for foreigners"* *"The stories are quite interesting but so long and much information. I'm not likely to spend much time reading them while visiting. I think for every story, there should be a brief summary about the story"*

SUB THEME 2.6 Non-connection		
Core Theme	Description (from codes)	Participant Comments
260 Non-connection	Some visitors did not feel connected to the location or enjoy the experience	*"On reflection I don't think this app did really change my thoughts about the Cultural Quarter …. It was less about the place and more about the experience"* *"Not really enjoy this visit"* *"found it a bit pointless for me personally"* *"not very interested in the poem and stories. Unlikely to approach Leicester history in this way"*
261 Generally not helpful	Some visitors did not find the app helpful	*"Felt a bit lost at times. Lack of connection between where we were walking and the story"*
262 Technical Barriers	The technical errors were numerous and very distracting	*"I wasn't sure whether some of the stories really related to their walking route, and one story had sections missing"* *"Some of the stories (the play in particular) had errors, missing dialogue, meaning that we gave up on it once it got to a point where we couldn't continue reading it. Parts of the stories were have to find a connection to the place where we were sent to read them"*
263 Actually distracting	Some visitors found the experience of using this app to explore the area a distraction	*"I always need to stop and stand in the street to look the information in the app. I mean the main aim suppose to see the surrounding environment, not the device"* *"I need to read the texts on the road. However, the texts are difficult to read while exploring. It's also dangerous for the user"* *"I disliked the fact that I had to walk around with my phone in my hand. If it was raining I could not have done that"*

Table 4-22 Stories app key theme 2 (Wilkinson, 2018)

4.3.5.1.3 Stories key theme 3 place

Key Theme 3 relates to the place and the way in which the visitor is relating to the location.

SUB THEME 3.1 Physical – the tangible and the visible		
Core Theme	Description (from codes)	Participant Comments
310 Physical – the tangible and visible	People noticed the buildings and shops	*"It's an interesting area with many beautiful buildings. I like that the buildings are still rugged and dirty"*
311 Buildings	People found the buildings interesting	*"Loved looking at the architecture about the shop fronts. Loads of different buildings through the ages"* *"The CQ is a really interesting, lively and entertaining area. The contrast between the modern architecture and the old."*
312 Present ambiance	People understood the nature of the place and learned a little more about it – even those who already know about it.	*"I appreciate the name 'cultural quarter' more than just where the theatre is"* *"The hidden spaces of silence and peace (church and cemetery) and the coexistence of old and modern buildings"* *"The buildings, the mix of old and new, glass and brick. Beautiful and little details everywhere, lots of different traditions. Liked how the working factories were just behind the square and liked how the app took me on a walk around this"* *"The clubs look cool."*
SUB THEME 3.2 Temporal – the place in time		
Core Theme	Description (from codes)	Participant Comments
320 Temporal – the place in time	People had an understanding of the historical relevance of the place	*"The industrial history is equally as interesting as that of any city"* *"That it used to be an industrial area that was very important for Leicester's specific industry"* *"The change in the Cultural Quarter for industrial to entertainment/arts area"* *"Amazing story of regeneration, nice looking clubs. Dark history"*
321 Previous usage	People understood that the area had a previous usage	*"That there was a textile Company at the Rowley Buildings on Queens Street"* *"Quite a few buildings located there that were previously factories, along with a snippet of what life would have been like"*
SUB THEME 3.3. Social – the place in the community		
Core Theme	Description (from codes)	Participant Comments
330 Social – the place in community	People understood the that location is vibrant with lots of activities and entertainment and an important part of the City of Leicester	*"shopping, coffee, theatre and maybe to look at the buildings a bit more. Music pubs etc sounds like a fun evening out to be had there if they like the same as me"* *"up and coming area with lots to offer."* *"great bars, theatre, creative spaces, dance studio, history"* *"I think it's an important and different event part of Leicester's 'cityscape'"* *"the buildings are beautiful and well integrated and carry a lot of Leicester's history"*

Table 4-23 Stories app key theme 3 (Wilkinson, 2018)

4.3.5.2 Sounds of the Cultural Quarter: themes and codes

OT1 The Visitor	T1 Approach to the visit	CT Discovering something new
		CT Random exploration
		CT Guided exploration - on a route
		CT Provided purpose
	T2 Personal activity	CT Fun
		CT Frustration
		CT Listening
		CT Looking
		CT Walking
	T3 Personal processing	CT Learning
		CT Focussing
		CT Thinking
		CT Reminiscing
	T4 Social Activity	CT Being with friends
		CT Discussion
OT2 The Experience	T1 Inadequacy of App	CT App is not helpful
		CT Insufficient information
		CT Insufficient content
		CT Insufficient context/connection
		CT Unfulfilled potential
		CT Unhelpful sounds
	T2 Interaction	CT Helpful visual design
		CT Unhelpful visual design
		CT The value of images
		CT The value of content
		CT The value of sound
		CT Instruction
		CT Triggering of the sound
		CT Distraction
		CT Personalisation/options
		CT Ease of use
		CT Value of the human story
	T3 Technical issues	CT GPS
		CT Data usage
		CT Battery usage
		CT Poor functionality
	T4 Personal experience	CT Immersive
		CT Fun
		CT Emotional
		CT Surreal/evocative
		CT Inspired/curious
		CT Negative experience
	T5 Concept	CT Concept
		CT Value of GPS
		CT Real music
		CT Confusing
		CT Revealing the unseen
	T6 Authenticity	CT Authentic sounds
		CT Connection and proximity
		CT Authentic content
OT3 The Place	T1 Historic	CT Buildings
		CT Previous usage
		CT Lost heritage
		CT CQ has historic/cultural value
	T2 Contemporary	CT Entertainment
		CT Ambience
		CT Cultural importance
		CT Buildings and architecture
		CT Side streets
		CT Diverse location
	T3 Personal association	CT Attraction
		CT Surprised by the CQ
		CT No attraction
		CT Legacy – visit again

Table 4-24 Sounds app themes and codes (Wilkinson, 2018)

Data from the free text questions on the Post Visit Form were collated and coded to identify themes. A total of 194 codes were created, then allocated into three overarching themes, 13 sub themes and 64 core themes (see table 4-24 page 4-163). Three key themes have been identified: 'The Visitor', 'The Experience' and 'The Place'. The full data set of codes, themes and participant comments is available in Appendix 4G.

4.3.5.2.1 Sounds key theme 1 visitor

Key Theme 1 relates to the visitor and includes sub themes which relate to visitor behaviours and activities which emerged from the codes.

SUB THEME 1.1 Approach to the visit		
Core Theme	Description (from codes)	Participant Comments
111 Discovering something new	People discovered things they hadn't seen before and enjoyed doing so.	*"It always fascinates me how little I know of and about a specific location and today was no exception. I discovered some buildings I didn't know existed and have learned the names of some of the streets I have walked down without knowing their names"* *"Looking around at the buildings as I usually don't take the time to as I'm usually just passing through"* *"Made me realise that there are a lot of places I didn't realise existed"* *"Looking around at the buildings as I usually don't take the time to as I'm usually just passing through"* *"I like that it encouraged me to explore areas I probably wouldn't have done to and helped me to become immersed in my imagination of what the area used to be like"* *"It feels like adventure when exploring and discovering new things in an unfamiliar city"*
112 Random exploration	People enjoyed exploring and discovering	*"I enjoy quite a lot by looking at the map and explore by ourselves, because you don't know what sound you will have for next circle you walk into. "* *"made exploring more engaging"* *"It really can help the tourist to explore the local history"*
113 Guided exploration - on a route	The app provided a route and a reason to navigate the streets	*"To find the road to next place and found that how diverse between the past and the present of the place"* *"The sounds chosen were relevant and interesting. I also walked down more streets that I would otherwise in order to hear as many sounds as possible."* *"It takes you to places of interest, avoiding time wasted on places that weren't so interesting"* *"Suggested route. I know the app is designed to allow freedom to walk where they want but people like direction"* *"I like that it encouraged me to explore areas I probably wouldn't have done to and helped me to become immersed in my imagination of what the area used to be like"*
114 Provided purpose	The app provided challenge and gave me a reason to explore	*"I also walked down more streets that I would otherwise in order to hear as many sounds as possible."*

SUB THEME 1.2 Personal Activity		
Core Theme	Description (from codes)	Participant Comments
121 Fun	People found the sounds were amusing, fun and atmospheric	*"The Athena was once an Odeon Cinema. There used to be more music shops. The sound of the ukuleles and heavy metal guitar is hilarious. It's build on old factories"* *"The Caribbean one is one of my favourite voices of the Cultural Quarter. Being pleasantly surprised while the app played the voice suddenly"* *"When I enter the church garden, I head mystery music, kind of crystal music, it's really engagement."* *"I enjoy walking around in the bad weather and listening to specific sounds"* *"It made more interesting as it was nice to hear old and new sounds and picture each one. It made it engaging as I had something to listen to."* *"The sounds made history more lively"* *"Sounds beautiful and I can't stop myself from dancing"* *"Yes – just because it gives you another experience, maybe more sensorial. It is entertaining and show to you that people in Leicester (well, professionals in heritage) care about their cultural legacy."*
122 Frustration	Some people found some of the sounds frustrating	*"I am surprised that the public baths, the police station and some voices of flat would be included in the Cultural Quarter."*
123 Listening	People enjoy listening and walking	*"I enjoy when our group discuss about the trail sign on the pavement. I also enjoy when using the app while walking along the area as the sounds make me feel involved with the area more than when there were no sound"*
124 Looking	People spent time looking at their environment and noticed things they had not seen before	*"Made me realise that there are a lot of places I didn't realise existed"* *"Makes you look around. Makes you question what you're listening to. It is definitely engaging. It is interesting."* *"I enjoyed listening to the music from the streets using the app. I also enjoyed using a map to get to know Leicester"*
125 Walking	People enjoyed walking and listening	*"I enjoy when our group discuss about the trail sign on the pavement. I also enjoy when using the app while walking along the area as the sounds make me feel involved with the area more than when there were no sound"*

SUB THEME 1.3 Personal Processing		
Core Theme	Description (from codes)	Participant Comments
131 Learning	People enjoyed learning about the history	*"It made or invited me to imagine how could be the place of the past. It also made me wonder a little bit more about the history of the Quarter, and in general about Leicester"* *"The chance to find out or get a small sense of how the area head been and what certain buildings had been before what they are now"*
132 Focussing	Listening to the sounds help people to focus on the surroundings	*"Hearing some sound and this make the trip interesting. We always thinking about what the place is"* *"Working out how they related to what we could"*
133 Thinking	Using the app made people think about the location	*"Makes you look around. Makes you question what you're listening to. It is definitely engaging. It is interesting. Makes you wonder many things."* *"To listen to the simulating sound"* *"The mystery about what the sound would be next. Trying to work out what sound was linked to what buildings (if any)"*
134 Reminiscing	The app helped people to reminisce	*"Reminded me of what used to be here"* *"Remembering the old days of the cinema"*

SUB THEME 1.4. Social Activity		
Core Theme	Description (from codes)	Participant Comments
141 Being with friends	Being with friends was important for some people	*"Hanging out with my class mates in the cemetery and going inside an old factory's court yard which is now a disco."*
142 Discussion	The app prompted discussion with others in the group	*"Group work. Discuss the subject with the other classmates"*

Table 4-25 Sounds app key theme 1 (Wilkinson, 2018)

4.3.5.2.2 Sounds key theme 2 experience

Key Theme 2 relates to the experience delivered by the mobile phone app and includes sub themes relating to the way in which the app is linking the visitor to the location as well as the visitors' reaction to the experience .

SUB THEME 2.1 Inadequacy of the App		
Core Theme	Description (from codes)	Participant Comments
211 App is not helpful	Some found the app to be unhelpful. People felt that the did not learn anything and they did not like the app	*"It's not very useful and not very convenient to use. It stops working when I put it to the backstage of the phone. I have to keep the screen light when I use the app"* *"I find it hard to say what I enjoyed as using the app made me feel a sense of sensory deprivation so I felt a bit disconnected from really experiencing the area, unlike if I was just walking around it."* *"It's not a useful app. You hear background noises. So what? I can hear those sound already in the city without the app. I didn't learn anything about the history of the quarter and Android people are at a disadvantage. Doesn't add anything to the experience"*
212 Insufficient information	People wanted more contextual information to support the sounds. The sounds on their own were insufficient in providing detail	*"In my opinion the app need more information, for example, when I am at a specific place and I hear some sounds I need to know what is that sound, where I am and why is that sound specific to that place"* *"I'd like to learn more about the history behind the sounds as it was interesting but I think it could be improved with more details about each one"* *"That there existed buildings and industrial corporations or cultural institutions that are not there anymore. But we learned more by reading the plates on the buildings we were spontaneously interested in."* *"It was interesting to a certain degree, but I would have appreciated more context for the different sites whilst listening to the sounds, for example, the history of the Palais de Dance and perhaps memories attached to it."*
213 Insufficient content	People wanted more content and layered information	*"Maybe have pieces of text to read/listen to, to describe the area"* *"With more context on the different sites (basic dates/history), and maybe a photo, I would be willing to use the app again"*
214 Insufficient context/connection	A lack of detail and authentic history, plus some sounds did not seem to connect with the location made the app irritating and unhelpful	*"It cannot connect to the real history"* *"I can't connect the sounds and the view which I saw together. 2 If no one explain how to use in the beginning, I don't really know how to use. 3. I can't recognise the past or modern sounds when I show."*
215 Unfulfilled potential	The app could do more	*"Somewhat – I like the idea but I think it could do more"*
216 Unhelpful sounds	Some of the sounds were helpful, appropriate, too long	*"The sound/music is good, but again it can't connect to the history"* *"The length of some of the samples – too long"* *"Modern sound feels redundant, I didn't feel that I gained anything from listening to them unless comparing them to the old sounds."* *"The phone effect as being representative of a home – the taps, keys, cooking sounds from the Alexandra flats work better for this"* *"The ongoing/never ending audio. I'm not sure whether I was in present or the past cause they only show the green circle for where I was locating, covering the purple and red."*

SUB THEME 2.2 Interaction		
Core Theme	Description (from codes)	Participant Comments
221 Helpful visual design	The map was a helpful guide	*"The graphic design in superb. Faultless. It's also highly usable. The layering of zones into past – past and present - present is logical and clear."* *"The circles were so fun to look at (where we were going). The option to listen to past/present was also a nice experience"*
222 Unhelpful visual design	The map and visual design were not helpful	*"The circles were vague, making it hard in some cases to know where the places actually were"* *"And they should include the symbols of churches and houses on the map to it would be easier to locate ourselves"*
223 The value of images	Adding images to the sound would help	*"people are more effected by visual so it only sounds it may can't let people focus"*
224 The value of content	More voices would be interesting	*"Could do with more voices and less things like flats and houses"*
225 The value of sound	People found the sounds interesting and amusing	*"I can enjoy the different sounds when I walk on the different streets"*
226 Instruction	More instructions would be helpful	*"I would have liked a bit more context. Sometimes the app was quite general and said something like 'music venue' or 'bus depot' what was the name of the music venue"* *"I would have been more engaged if I could have found out more about the environment rather than just sounds"*
227 Triggering of the sound	Noises were surprising and the triggering of the sounds through GPS was effective	*"I am surprised that the public baths, the police station and some voices of flat would be included in the Cultural Quarter."* *"The sound of application, which perfectly matches with current navigated areas was brilliant 😊"* *"The sounds fade in and out naturally as they would when walking down the street. The map helped me to know where I was going easily"* *"The ability to listen to multiple sounds at the same time. The use of the circle to show a radius of the sounds"* *"The sounds have generally been well thought out and I love how the old and the new can overlap both in sound and abstractly in history"*
228 Distraction	The app was disconnecting	*"I find it hard to say what I enjoyed as using the app made me feel a sense of sensory deprivation so I felt a bit disconnected from really experiencing the area, unlike if I was just walking around it."* *"It is difficult to be attentive to the sounds and still be fully aware of your surroundings (eg: on-coming traffic)"*
229 Personalisation options	More personalisation options would improve the app	*"Have a way to disable the different sounds overlapping"* *"If user is near a cultural area it can play sound about users preference which are like music or kids voice laugh, conversation"* *"Possibility to choose to get more information. Maybe design it more like and audio guide"*
2210 Ease of use	The app is simple and easy to use	*"Good user interface design, colour, font, simple UX and easy to use"* *"it's a really well designed app. Very engaging it's also very easy to use"*
2211 Value of Human Story	People would have like more story/human content	*"Co-operate with the local community? I'd really like to hear some old people talking old story of Leicester"* *"I'm kind of hope that the app could offer us more details about the building like stories, but not just music. For example I really hoped to find more about the temple one, but it's only the music."* *"Maybe need people speaking"*

SUB THEME 2.3 Technical Issues		
Core Theme	Description (from codes)	Participant Comments
231 GPS	The GPS does not work well and this is distracting	*"Not easy to locate yourself as GPS was inaccurate"*
232 Data Usage	Concerned about data usage	*"Waste my data and battery of the phone. Cannot work on the backstage"* *"Make it so less data is required to use it."*
233 Battery usage	Concern about the battery usage	*"Allow lock screen to save the power of device"* *"When the screen is off, the app doesn't work. Please fix this problem"*
234 Poor functionality	Parts of the app don't work properly and people though it might work well off line	*"The fact that I could not get the tracking device to work was a huge spoiler"* *"An off line version should be developed. I mean I want to experience it even when I am not at that place although I know it's more meaningful when integrating with GPS and experiencing right the place. I need more functions and options such as I can choose the sound and then info/pictures about it pop up"*

SUB THEME 2.4 Personal Experience		
Core Theme	Description (from codes)	Participant Comments
241 Immersive	The experience was immersive and evocative	*"The recordings, the immersive feeling you get when you are in a place listening to old soundtrack, makes me curious to find out more"*
242 Fun	The sounds were amusing and fun	"There were laugh out loud moments when unexpected music played when you were getting your bearings on the app. "
243 Emotional	The app helped me to reminisce and react emotionally to the location	*"The app provided an enjoyable way to think about urban loss and memory. It was interesting to a certain degree, but I would have appreciated more context for the different sites whilst listening to the sounds, for example, the history of the Palais de Dance and perhaps memories attached to it."*
244 Surreal/evocative	The sounds evoke the pas and parts of the visit were surreal	*"It is very interesting to hear those sound, it was somewhat surreal. It was like being in a movie"*
245 Inspired/curious	The app inspired me to know more and sparked by curiosity	*"found that my curiosity was sparked but was sometimes frustrated that I couldn't always find the answers I was looking for and the app didn't help direct me"*
246 Negative experience	I did not enjoy this, the app made me cross, I am less interesting in the area than before	*"No additional information to the sounds!! (made me angry). Like histories to the places/original sound or redone"*

SUB THEME 2.5 Concept		
Core Theme	Description (from codes)	Participant Comments
251 Concept	The app was an interesting concept and offered an unusual experience	*"I think the app as a concept is really good and the idea it has past and present sounds to hear the difference and demonstrate the historic changes its gone through"*
252 Value of GPS	The integration of the sounds and the use of the GPS was interesting	*"The GPS tracking is interesting from circle to circle. I want to listen to the music"*
253 Real music	People associated the real music with the location	*"There are three places which are some kind of music venue and the location of these place just properly make a triangle. The Caribbean one is one of my favourite voices of the Cultural Quarter"*
254 Confusing	The experience confused me and there were insufficient instructions	*"I disliked that it does not show pictures of the building's past. Sometimes I was lost because I could not recognise where the sound came from (from building to the left or right)."*
255 Revealing the unseen	The app made me walk somewhere new and reveal the unseen	*"Being able to hear inside the buildings without actually going with inside"* *"It was engaging for me because of the App, to hear the sounds inside the buildings as well as outside"* *"There used to be a church there just close to the Indian temple and now it's gone, (or they are in the same building) the opera singing by a woman is beautiful"*

SUB THEME 2.6 Authenticity		
Core Theme	Description (from codes)	Participant Comments
261 Authentic Sounds	Authentic sounds were effective in helping people imagine	*"Have the connection between the sounds and nowadays views which you can see eg: bells sound and the cathedral"* *"I felt that at the Orthodox Church for me made it interesting and the historical context and sound is really interesting"*
262 Connection and proximity	When the app connects appropriate music to the right location the app is very effective and immersive	*"I felt that at the Orthodox Church for me made it interesting and the historical context and sound is really interesting"* *"I felt like I travelled to past but back to reality next second. Romantic feeling when travelling through time."*

Table 4-26 Sounds app key theme 2 (Wilkinson, 2018)

4.3.5.2.3 Sounds key theme 3: place

Key Theme 3 relates to the place and the way in which the visitor is relating to the location.

SUB THEME 3.1 Historic		
Core Theme	Description (from codes)	Participant Comments
311 The Buildings	People were aware of the historic use of the buildings	*"Highlighting original use of buildings"*
312 Previous usage	People understood the previous usage of the area and its association with music and industry.	*"It has a continuous history and connectivity between different time periods, especially in relationship to things like music and social clubs"* *"There used to be more music shops. The sound of the ukuleles and heavy metal guitar is hilarious."*
313 Lost heritage	People expressed a concept of lost heritage- that the area has changed and it might have been better in the past	*"That it is more run down and uninteresting than I had previously considered it to be. So many of the sound reflect lost heritage, and current 'culture' is not really what the area displays"* *"It was better when it had a disco!"* *"It seems that there are used to be a place where the print work used to be. Now it is a quiet place with some offices and bars"* *"Older industries/activities that have no existence these today. A few bits of history that only seen to exist today as sounds dies to the loss of the building"* *"The variety of uses that the area has had through the years, the variety of architectural styles; the sense of absence that exits having known how communities have disappeared, which is only made worse by the disconnection and alienation I feel in response to the glass monstrosities such as the Curve Theatre. The original brick buildings retain a sense of history"*
3.1.4 Historic value	People were aware of the historical aspect of the location	*"It has been a lively place sine a lot of time (don't know since when). Also, today we can see how that movement has continued, some of the buildings have disappeared"* *"It is a gem of tightly packed historically interesting and aesthetically pleasing buildings"* *"Remembering the factory history reminds you of the wider contribution made by people in this area"*

SUB THEME 3.2 Contemporary		
Core Theme	Description (from codes)	Participant Comments
321 Entertainment	People noticed the modern entertainment facilities	*"The cute shops there, especially the 19Gale, cause we plan to sing karaoke there during Chinese New Year. And there are some plays in the Curve that I'd like to watch"*
322 Ambience	The area is vibrant	*"It used to be a vibrant area of Leicester and still is"* *"There is a lot going on there – more than I previously thought – not just Curve Curve Curve"*
323 Cultural importance	The area is an important part of Leicester	*"I think it's an important and different event part of Leicester's 'cityscape'"*
324 Buildings and architecture	The buildings and architecture are interesting	*"The way the Mercury Offices have moved, the goings on of the Secular Society (and significance of its architecture) and the amount of churches and temples that were/are here"* *"I felt that at the Orthodox Church for me made it interesting and the historical context and sound is really interesting"* *" I would say the Curve is interesting because the architecture stands out and the transformation it's gone through the years"*
325 Side streets	People enjoyed walking down the small side streets	*"learned the names of some of the streets I have walked down without knowing their names"*
326 Diverse location	The area is diverse with old and new, rich and poor juxtaposed	*"It's a diverse mix of old Leicester and new Leicester – not ignoring one in favour of the other. The App tries to capture that balance and history"* *"The hidden spaces of silence and peace (church and cemetery) and the co-existence of old and modern buildings"* *"The juxtapositions – music venues by garages – dance studios and cinema – creative business at the heart with great burgers"* *"A very interesting area, with a surprisingly diverse amount of places: hip ones as well as modern-posh buildings as well as historic ones and ruins"*

SUB THEME 3.3 Personal association		
Core Theme	Description (from codes)	Participant Comments
331 Attraction	The area is attractive and interesting	*"It is a gem of tightly packed historically interesting and aesthetically pleasing buildings"*
332 Surprised by the CQ	There is more to the area than they thought	*"There is a lot more there than I originally realised"* *"There's a lot more to it than I previously knew and it's larger than I realised"*
333 No attraction	I am less interested and would not recommend this to others	*"That it is more run down and uninteresting than I had previously considered it to be"* *" I can't really gain something from that app"*
334 Legacy – visit again	I would visit again and encourage others to	*"I think that I would go back to the Cultural Quarter and explore it more. It's an interesting part of the city. Although I'm slightly less interested in the history and more of what there is to offer now."* *"Take my friends to see the app and use it"*

Table 4-27 Sounds app key theme 3 (Wilkinson, 2018)

4.3.6 Analysis of the results of the Mobile Apps study

Analysis of the results relates to research questions 6, 7 and 8, see section 1.3.3., page 1-13.

4.3.6.1 Supporting visitor engagement (RQ 6)

Both apps had a positive impact on engagement and emotional response. These apps gave visitors a purpose and a reason for visiting the location. They provided some sense of a route to explore the area, encouraged people to slow down as they walked around, to take note of things and to look at buildings and streets. Both apps inspired curiosity and interest and, in some cases, a desire to return to the area for further visits. Visitors said that their experiences were fun and that the apps helped them to recall experiences and talk to others. Some discovered things they didn't know, others had the chance to reminisce. A number of themes emerge regarding both the engaging and disengaging nature of the visit experience:

Connecting with the area through using the apps: Comments made by those using SCQ app indicated a real and genuine connection with the area and that, for most, the app facilitated greater empathy and depth of appreciation. A number of key themes emerged from these comments, the most common being that people found the area and the app interesting. A significant number of comments were made about the history, heritage and memories associated with the area and buildings featured strongly, with reference to the modern, the old and the beautiful. Diversity was mentioned with reference to the then and now, the juxtaposition of the underdeveloped and overdeveloped elements, modern and posh buildings. An awareness of the historical transition of the area is demonstrated, with comments on the past and the present, the change in building usage and functionality. Cultural aspects were identified with references to music, bars, social clubs and discos, both current and from the past. Thoughts on the Cultural Quarter refer to its vibrancy, both now and in the past with comments on it being a lively place with a living community and various functions. The HS app similarly increased appreciation of the Cultural Quarter, again with mention of the buildings, architecture and vibrancy. Those using the Hidden Stories app also mentioned the lives of the people who used to live, work and visit the area although some felt they had gained very little and would have preferred a closer, more obvious, connection between the story and the area in order to make this a more satisfying learning experience. Lack of connection with the area resulted in confusion as to why

they had been directed to a particular place to read a chapter when there was no obvious link to that location.

Sufficiency of content: Insufficient information was the major complaint about the Sounds app. People didn't always know what they were listening to, why this sound had been selected for inclusion in the app, which building or period it belonged to or how this sound was relevant to the area.

Technical problems: Accuracy of the GPS, slowness of response and concerns about battery and data usage were reported as negative and distracting issues. The inability to zoom the screen on the android version made the map virtually unusable and the lack of background functionality meant that the app stopped working when the screen switched off. A number of participants were confused by the Sounds app: some didn't know how to use it or what it was supposed to do. Some found the map difficult to navigate, partly due to the lack of street names, and some found the circles distracting. Signify current location by altering the colour of a circle to green resulted in some people being unsure as to whether they were listening to sounds of the past or present. The overwhelming frustrations of the Stories app were with the technical issues which resulted in some of the texts being usable.

Disconnection from location: Focussing on the screen disconnected visitors from their environment, preventing engagement with their local surroundings and potentially making the experience unsafe. Some participants felt that they missed seeing significant examples of heritage due to their focus on their phone. Concerns were expressed about the safety aspects of walking round without due attention to immediate surroundings and potential dangers of traffic and theft.

Both apps could be improved to increase their capacity to engage visitors with the area. Increased content, improved context, closer relationship to the physical location, more details, pictures, images and other multimedia were all examples of things people wanted more of. In terms of design more layering, increased opportunities to personalise, more interactivity and the facilitation of user contribution to the app

content were key suggestions for to improving both apps. Whilst this is interesting it confirms much of what is already known about good mobile app design (Heritage Lottery Fund, 2013).

4.3.6.2 Visitor Expectations (RQ 7)

A number of factors emerged as being important to the visitor in terms of being engaged with the cultural heritage:

Learning: Participants learned something from using each app, although this acquisition of knowledge was limited and didn't always satisfy the visitors' curiosity to know more.

Enjoyment*:* Both apps created a degree of enjoyment which was valued by the visitors. Exploring the area, walking outside, wandering down back streets and getting lost in unchartered areas provided enjoyment as did the opportunity to interact with others, sharing memories or discussing the past. The music in the Sounds app was demonstratively enjoyable as many visitors began 'dancing' when they heard musical sound clips. People said that they enjoyed the sensory activities of listening and looking and some mentioned the element of surprise as new and unexpected sounds were played,

Immersion: Visitors liked the immersive nature of the experience, commenting particularly on the emotive nature of the sound clips.

There is an underlying inference that participants consider engagement to be predominantly about learning, and that a successful engaging experience is one which teaches the visitor and develops their knowledge. The results of this study would suggest that people overwhelmingly want more historical information, context and content, even though reference to other measures of engagement, such as enjoyment, interest and fun were clearly made throughout the project. Although participants agreed that their interest and curiosity in the area was significantly raised they considered this to be insufficient, on its own, to fully engage them. Unless the raised level of interest is supported by the supply and subsequent acquisition of knowledge the overall

experience is perceived as being less satisfying. The visitor becomes frustrated, disappointed loses motivation and interest and is ultimately disengaged.

Having fun and enjoying the experience, with this group of participants at least, appears to be less important than learning and only one or two suggested that adding gamification to these apps would have increased their engagement.

4.3.6.3 Most successful features (RQ 8)

The following features were effective in engaging the visitor with the cultural heritage:

Looking: There is evidence that the apps made visitors take more notice of things, such as side streets, that they have not previously seen and encouraged

> *"looking around at the buildings as I usually don't take the time to as I'm usually just passing through"*
>
> *"even though I went to the Cultural Quarter before I had never noticed this church. Due to the app, I realise how big the Cultural Quarter actually is"*

Route: Some participants liked the prescribed route provided by the Stories app and when the stories linked directly to the buildings enjoyment of the area was enhanced. The Sounds app provided purpose and a route for the visitor as they were motivated to listen to the sounds, which they found interesting and use this to explore the location in a semi structured way.

Interaction: Interaction with others, such as reading to each other, discussing the characters, trying to work out the context of the poems and even acting out the play contributed to amusement and fun. People enjoyed the texts, the author descriptions and looking at the area through the eyes of another.

Sounds: The sounds in the Sounds app made people curious and the limited amount of provided interpretation led visitors to question and wonder, making them more active, rather than passive, in the process of their own interpretation of the area. The sounds brought the area to life and made the inaccessible accessible, such as being able to hear inside the Leicester Mercury offices. Participants used their imagination to create their

own understandings of what they were hearing. The music clips were particularly popular for being both fun and evocative.

Good design: Participants found the user interface of the Sounds app aesthetically pleasing and described the app as simple and easy to use. The option to choose between past and present sounds was popular. Participants enjoyed the locative functions and the way in which the app switched sound clips automatically and could fade and overlap sounds according to where they were. This provided an explicit connection to the site and a context which people valued. Participants were positive about the sound clips in terms of the selection and quality.

The most attractive element of the Stories app was the quality and nature of the creative writing. Participants liked the story telling and poetry. The hand drawn map was visually pleasing and functional, with easy navigation of the screens. The novel use of animated text and illustrations had a mixed reaction with some disliking the slowness of the scrolling text so much that they refused to read that particular story. Some people disliked reading on their phones saying that the text was too long to read outside.

Content: Some of the stories were considered to be too complicated and incomprehensible to certain visitors. Likewise the adult nature made certain stories inappropriate for younger audiences.

4.3.6.4 Recommendations for improving the Sounds app

- include more detailed information: more history, more about the buildings, more context for the sound clips and more stories about the people who lived and worked in the area,
- add more visual images, particularly photographs to confirm which building are associated with the sound and to provide illustration of the past
- provide layered information and allow more visitors regarding different sounds and further exploration of information,
- include personalisation, for example disabling the overlapping sound feature,

- improve the technical functionality, improve the accuracy of the location awareness and the make it possible for the app to work in the background,
- include a brief introduction, with clear instructions of how to get started,
- include interactivity, for example, allow users to record and contribute their own sounds, comments and thoughts on the Cultural Quarter.

4.3.6.5 Recommendations for improving the Stories app

- include audio narration and additional supporting sound clips: having the story read out was the most suggested improvement,
- connect more intimately with the location,
- include more authentic real life historical tales,
- add visual images and photos of buildings, to enhance the story telling and to provide confirmation of location,
- add more stories and more routes, perhaps include some gamification features such as puzzles and mysteries,
- include personalisation which can allow visitors to change the text display, turn on audio commentary etc,
- include optional layers of information including references,
- shorten the blocks of text and make the stories more comprehensible.

4.3.7 Limitations of the study

Participant representation. Ideally participants for this research project would have represented the typical intended audience for these apps, however identifying this audience was difficult. To achieve a statistically significant study group a range of people were invited to take part in the project, some of whom were local and some of whom were not. The largest groups were drawn from MA students at the departments of Museum Studies, University of Leicester and Digital Design, De Montfort University, many of whom were from overseas and the majority of whom were unfamiliar with

Leicester. This group may skew some of the results in terms of increasing knowledge and interest in the area since the starting point for many was often nil. It was noticeable that the local Leicester participants were often less impressed with the Cultural Quarter as an area than the students, however this negativity did not translate into overall research results as the local group was smaller.

Limited story options. Most of the visits using the Stories app used the same two stories: *The Imperial Typewriter* and *Crow Step*, and so the findings may not be representative of the app as a whole. *For the Love of Something* suffered from technical issues resulted in the story being unreadable, the length and complexity of language used in *Marginalia* meant that this story was rarely selected. Only 8 of the 64 verses of *Love the Life You Live, Live the Life You Love* are included effectively rendering this text unsuitable for the study.

The Geneva Emotion Wheel. Two issues arose with the use of this tool for measuring movement in emotion: the descriptors were often confusing and several found it difficult to initially benchmark their emotions, which may have led to a number erroneously registering 'none' as their starting point. Additionally a large number of the study group had no knowledge of the area prior to the project and so also registered 'none' as their starting point. This high number of those benchmarking their initial intensity as 'none' at might adversely skew the movement results in a positive rather than negative direction.

4.4 Summary and conclusions

This chapter has presented the research and results from the preliminary studies.

4.4.1 Implications for the design guidance

Recommendations from the Digital Building Heritage Project review identified the need for improvements to strategic planning and project management, product and project evaluation, product usage and promotion. Implications for the guidance are that solid and robust project management needs to take place across the whole life cycle of the product. Subsequently the Guide provides a project framework focussing on all stages

of the project, from the inception of the idea through development, testing and implementation to evaluation and eventual decommissioning. It is anticipated that the Guide will address the core themes as follows:

Legacy and Impact: Greater focus on the intended purpose of the product, the promotion and launch will increase the chances of the product being used sufficiently and appropriately by the visitor.

Collaborative Research: Projects often involve partnership and collaboration between heritage practitioners and their associated designers/developers and the *Guide* recognises the need for clear communication and liaison between these partners with a strong focus on objective setting and project scoping to ensure that all parties understand the nature and context of the product and how it is intended to engage the visitor.

Project Management*:* A focus on the whole life–cycle of the product will encourage heritage practitioners to look beyond the initial design and development of the digital media and remind them to consider less obvious issues such as maintenance and even the eventual decommissioning of the product. This will help prevent products being launched and then left to become outdated or even lost altogether.

Product Evaluation*:* The Guide includes stages for testing and evaluating products and addresses this from the planning stage onwards.

Results for the Mobile apps study confirm the good practice in relation to interpretation and the design of digital media and demonstrate that digital can support visitor engagement by provoke emotional reactions however in order to do this well a range of visitor behaviours (engagement states) need to be specifically designed for.

Using the findings from phases one and two of this investigation the research has devised a framework for engagement which is broadly divided into four stages to form a continuum, starting with *attraction*, then *absorption*, followed by *disengagement* and finally *extended engagement*. Within each of these stages engagement is evidenced by

the behaviour or 'engagement state' of the visitor and for each stage there are a variety of behaviours which might be exhibited. Within the *attraction* stage these behaviours include being *curious*, *interested* and/or *attracted*. Within the *absorption* stage these behaviours divide into three categories: cognitive, emotional and cognitive/emotional and include *learning* and *understanding* (cognitive), *empathising*, *enjoying* and *having fun* (emotional), *involved immersed*, *interacting* and *connected* (cognitive/emotional). Within the *disengagement* stage the behaviours are *leaving* and being *satisfied* and within the *extended engagement* stage these behaviours are being *curious*, *inspired* and/or *interested*.

5 Chapter Five: Development of the Design Guide

5.1 Introduction

This chapter addresses research objectives 3 and 4 of this study, as outlined in section 1.3.2, page 1-12. It introduces the design guidance explaining how its development has been influenced by the literature review and preliminary studies and describing how it can be used to support the production of digital media products designed to deepen visitor engagement.

5.1 The Design Guide

The guidance is a collection of tools and guidance for cultural heritage practitioners and digital designers (referred to in this chapter by the singular term 'creator') which provides support and advice for the production of interpretive digital media products, figure 5.1 page 181.

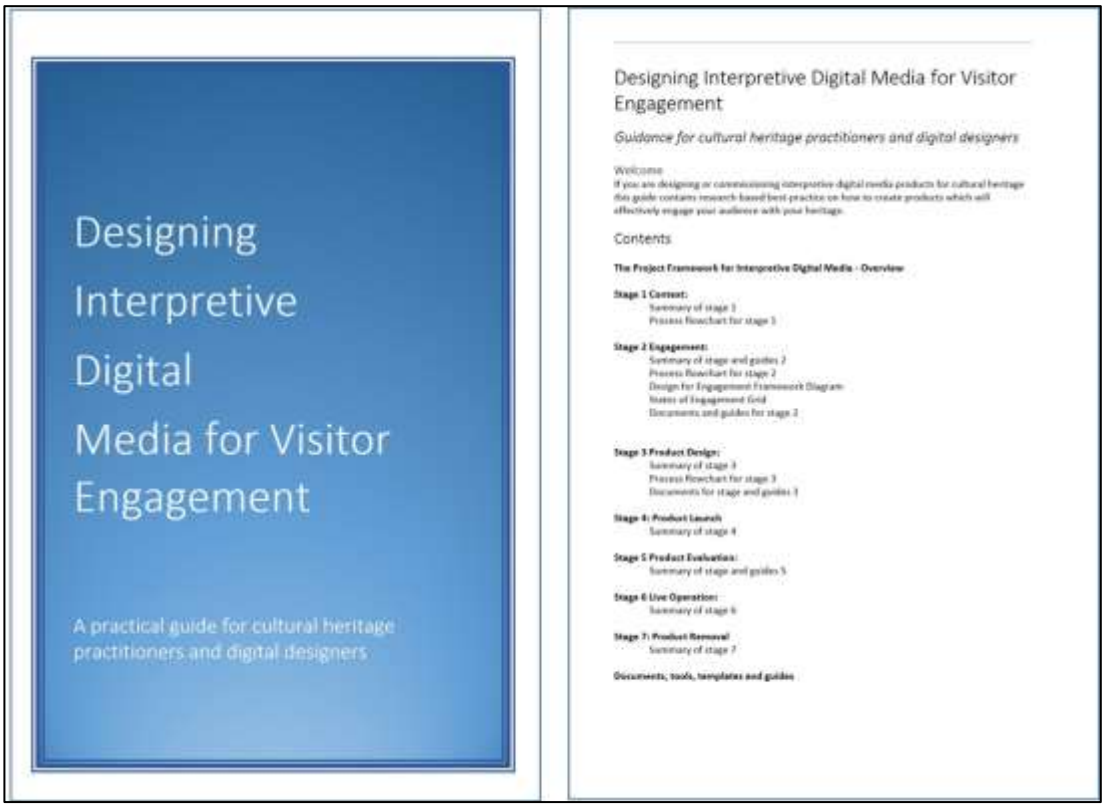


Figure 5-1 The Guide (Wilkinson, 2018)

The guidance proposes a project framework of four overarching phases and seven stages, see figure 5-2 page 5-182.

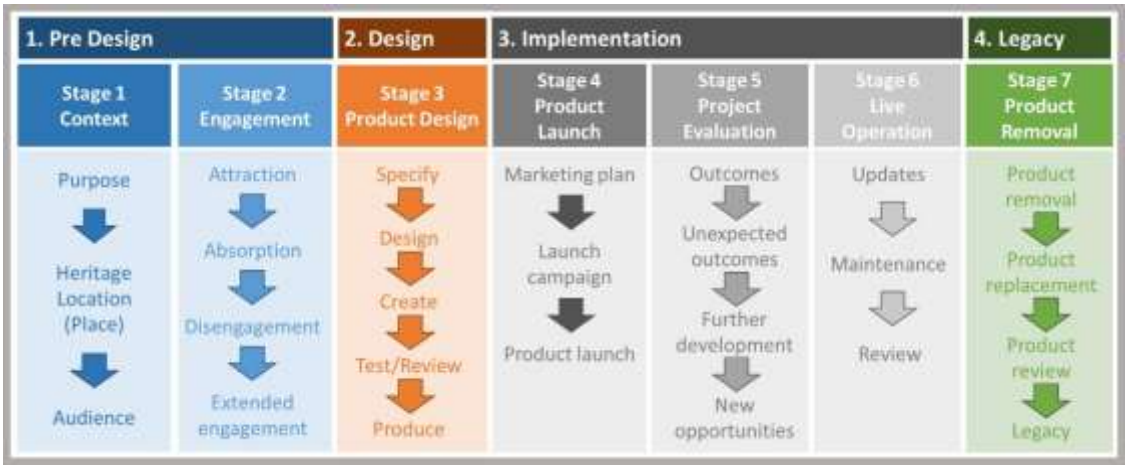


Figure 5-2 Project framework (Wilkinson, 2018)

Each stage of the project framework is described within the guidance and step by step support and advice is provided. This chapter describes each stage of the project framework, the tools provided and the supporting documentation.

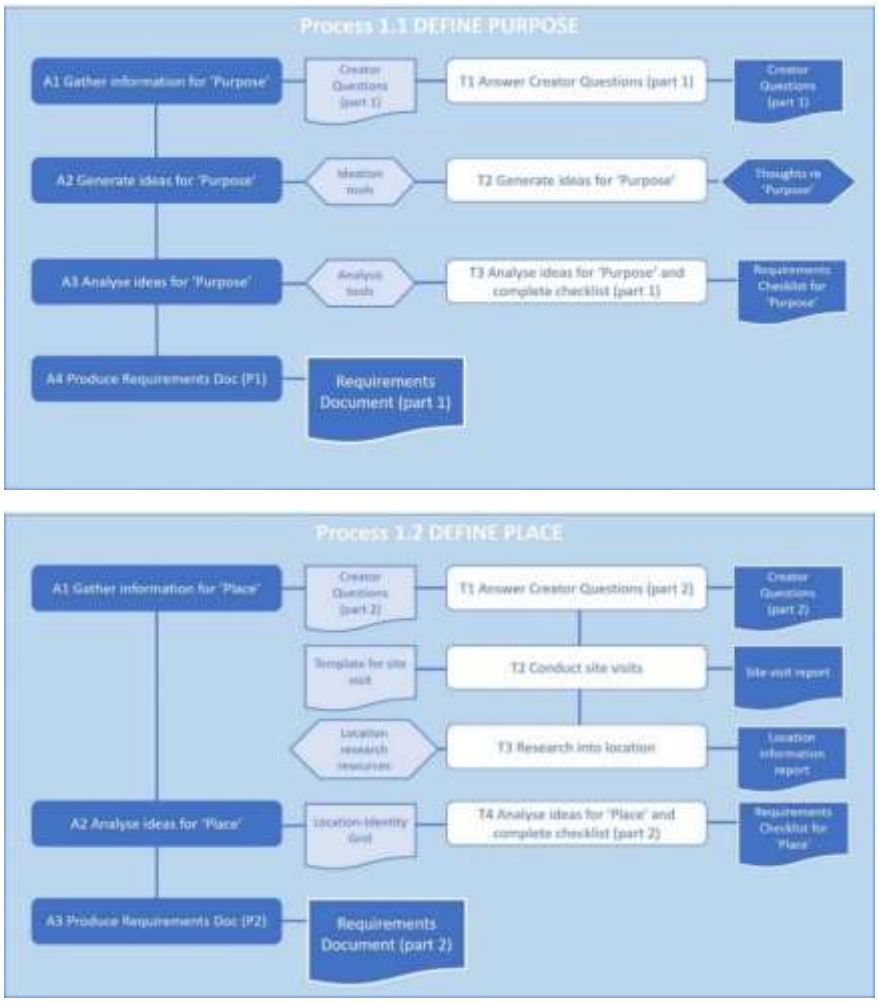
5.1.1 Project Stages

5.1.1.1 Stage 1 Context

Preliminary studies and secondary research identified potential deficiencies in the early planning stages of cultural heritage interpretation projects. As a result products may be directed more by what is technically possible than by the intended objectives of the interpretation or the needs of the visitor (Wilkinson and Higgett, 2015). Early planning might also be overly focussed on the information the heritage practitioner wishes to impart, rather than what would be of interest to the visitor. Limited consideration of the visitor, in the early planning stages of the project, regarding how they might engage, or might want to engage, with the cultural heritage can lead to products which are restricted in how they address certain aspects of engagement. As a result the digital media might focus too much on one measure of engagement, such as learning, at the expense of another, for example, having fun. This could lead to products which are dominated by information but lack content which is more evocative, or vice versa

(Wilkinson, 2016). The guidance proposes a substantial Pre Design Phase for projects divided into two stages. Stage 1 concentrates on establishing the *context* for the product with a focus on three specific factors: the purpose of the interpretation, the needs of the visiting audience and the nature of the place being interpreted. Stage 2 focuses on engagement.

A range of different and conflicting agendas can confuse the design of a product early in the project process. Secondary research and preliminary studies provide evidence of insufficient consideration and analysis of the underpinning context in which a digital product is intended to operate. To address these problems the first stage of the *Guide* requires the designer to consider the core aspects of their project: purpose, place and audience. Flowcharts for each process is shown in figure 5-3 pp 5-183/184.



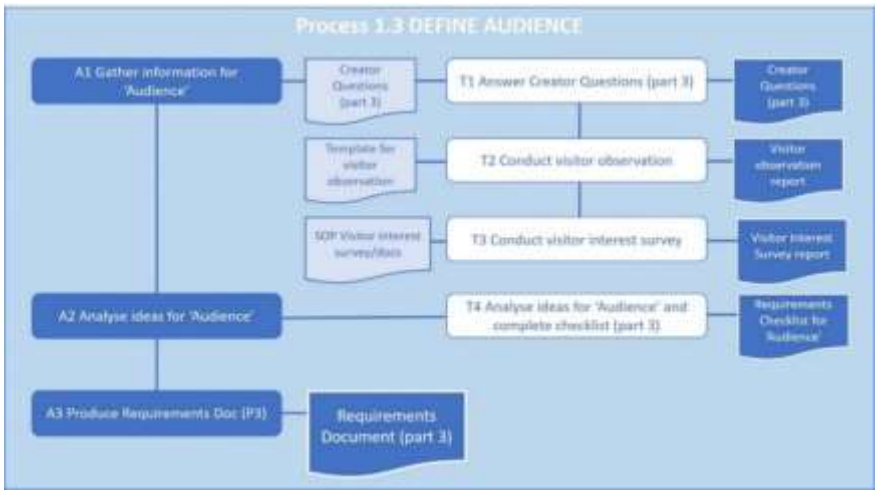


Figure 5-3 Stage 1 process flowchart (Wilkinson, 2018)

1.1 Purpose: This process helps the creator to focus on the overarching goal of the proposed project. Questions are used to encourage identification and analysis of the core objective for this product and a range of industry standard ideation tools and decision making techniques such as brainstorming, mind-mapping and force field analysis are suggested to support the creator with this process, figure 5-9 page Identifying and defining purpose is comprised of four activities.

PROCESS 1.1: **PURPOSE** *"WHAT" is this product for?*

Suggested questions for designers/curators

- What do you want to **achieve**?
- What do you **really** want to achieve?
- What is the **story** you want to tell?
- What does **engagement** look like in the context of your location?
- What do you want the audience to **do/know/feel** as a result of using this product?
- How are the following experiences important in the context of your visitor experience: **learning, understanding, enjoying, feeling**, **appreciating** something?
- **Why mobile**? Could you do this as effectively with paper?
- What **don't** you want?

Tasks - suggested models and tools

Information gathering:

- Curator/designer questionnaires (based on the questions opposite) to explore and scope the desired outcome

Idea generation:

- Brainstorming/ Mind-mapping/ Reversal assumption and others

Analysis and decision making:

- Force field analysis/SWOT analysis
- Checklist of features for 'purpose'

Figure 5-4 Process 1.1. summary (Wilkinson, 2018)

Activity 1 Gather information: using the *Creator Questions* document (see section 5.1.3.1, page 5-216) the creator considers what they want their project to achieve. Attention is paid to the impact they want the product to have on the visitor and the type of experience they want to provide. Creators are also asked

to consider if a digital approach is the most effective way of meeting their ambitions or whether a non-digital approach would be more beneficial.

Activity 2 Generate ideas: the creator generates ideas relating to the purpose of their product by using ideation tools suggested by the *Guide* such as mind-mapping and brainstorming.

Activity 3 Analyse Ideas: using the ideas generated by activities 1 and 2 the creator identifies the design requirements for their product. The Design Requirements Checklist (see section 5.1.3.2., page 5-128) provides suggestions of typical requirements. The creator is asked to confirm which requirements they want for their product by ticking the appropriate box.

Activity 4 Produce Requirements Document: using the Requirements and Features Grid Tool (see section 5.1.3.3, page 5-220) the creator maps the requirements which they identified in the Requirements Checklist to product features which have been identified and suggested in the *Guide*.

1.2 Place: focusses on the place which is to be interpreted, in particular the unique identity of the location and how it should be presented. Tuan (1977) identifies four features which are important for understanding place: physical, personal, social and cultural. To support assessment and analysis of these issues a Location-Identity Grid Tool has been created by the researcher, based on Tuan's four key features, see figure 5-19 page 5-208. For heritage sites with limited remaining evidence, or locations were the motivation of the visitor cannot be ascertained this process is particularly important. A place-centred approach should be used alongside a user-centred approach to design the digital media. A series of questions are posed to support identification and analysis of the location and a range of tools and techniques are recommended for information gathering and analysis including observing visitors, research on the location, and the *Location-Identity Grid*.

PROCESS 1.2: **PLACE** *"WHERE" is this product for?*

Suggested questions for designers/curators	Tasks - suggested models and tools
• What are the **defining features** of this **location** from the point of view of the **curator**? • What are the **key features** of this **location** from the **visitor's** point of view? • What is the nature of this place: **cultural, social, physical**? • How do people **appropriate** this **place** for their own use – and how does your product allow them to do this? • How does this product enable people to **engage** with the **location**? • How does your product **enhance** the **place**? • How does your product create a **meaningful relationship** between **visitor** and **place**? • How does your product allow a visitor to **interact** with, **adapt** and **appropriate** the place? • How does your product **convert a 'space' to a 'place'**?	*Information gathering:* • Curator/designer questionnaires (based on the questions opposite) to identify and understand the nature of the place • Site visits • Research into the location (web-based/literature/local interest groups) *Analysis and decision making:* • Location Identity Grid • Checklist of features for 'place

Figure 5-5 Process 1.2 summary (Wilkinson, 2018)

Activity 1 Gather information: Using the Creator Questions in the Creator Questions document the creator considers the place which is being interpreted. Task 2 recommends that the creator visits the heritage site to observe and gather information regarding the physical nature of the place. Task 3 recommends that the creator conducts further research into the location to identify other relevant aspects of the place which will be important to design of the product.

Activity 2 Analyse ideas: Using the Design Requirement Checklist and Location-Identity Grid tools the creator analyses the ideas generated in tasks 1, 2 and 3 to identify the design features that will provide a rich, accurate and authentic interpretation of the location.

Activity 3 Produce Requirements Document: using the analysis from the previous task the creator completes the Design Requirements Document.

1.3 Audience: This process focusses on the target audience encouraging the creator to consider the nature of the visitor: what they want from the experience; how they already use digital media and mobile phones; what they already think or feel about cultural heritage, in particular, the location being designed for. A series of questions are posed to encourage identification and analysis of the target audience and a range of

tools and techniques are recommended for information gathering and analysis; including visitor surveys and questionnaires.

PROCESS 1.3: **AUDIENCE** *"WHO" is this product for?*	
Suggested questions for designers/curators	**Tasks - suggested models and tools**
• Who is likely to use this product? • What is their connection to this place (knowledge/interest/experience/usage)? • How will you segment your audience/visitors? • Who will you pitch your product at? Who is your main audience? • What do the target audience want from their visit? • Are you looking for new audiences/visitors? • What are you visitors' motivations in coming to this place? • What's going to stop your audience/visitor engaging with the place and/or your product • In what context will the visitors use this product (alone, in family groups, with others?)	*Information gathering:* • Curator/designer questionnaires (based on the questions opposite) to identify and understand the nature of the audience • Visitor observation • Visitor interest survey *Analysis and decision making:* • Checklist of features for 'audience'

Figure 5-6 Process 1.3 summary (Wilkinson, 2018)

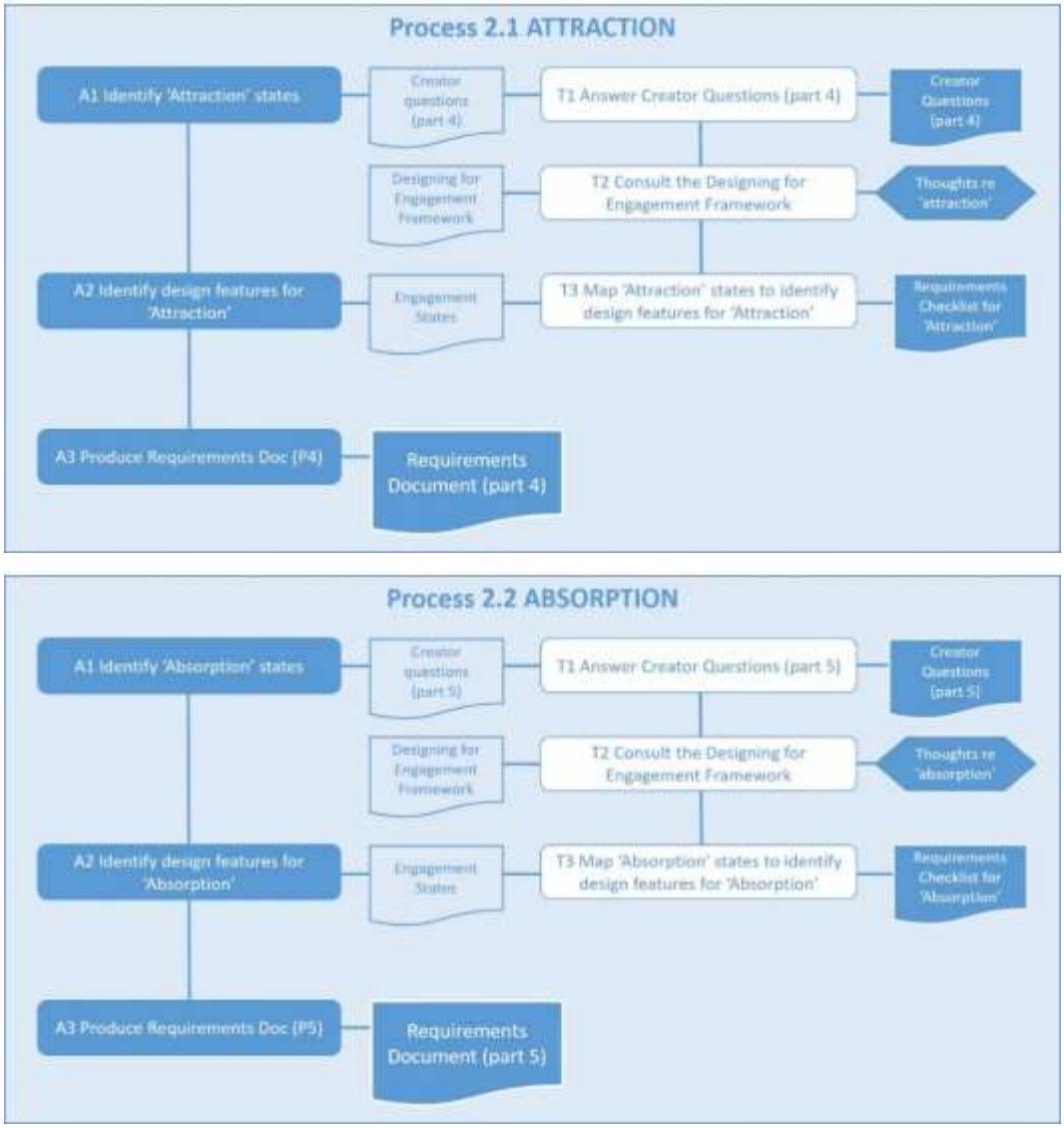
Activity 1 Gather information: using the questions outlined in part three of the *Creator Questions* document the creator considers the target audience and their potential needs. Task 2 recommends that the creator undertakes visitor observations to ascertain how people naturally relate to the location and task 3 recommends that the creator conducts a survey of visitors to ascertain their interest in the location. A standard operating procedure for conducting a visitor interest survey is provided in the *Guide*.

Activity 2 Analyse ideas: using the Design Requirements Checklist to analyse the ideas generated by tasks 1, 2 and 3 the creator identifies the requirements needed to meet the needs and expectations of the audience. A number of typical requirements related to audiences and visitors have been identified by the researcher and listed in the *Guide*.

Activity 3 Produce Requirements Document: using the analysis on audience from the previous task the creator completes the Design Requirements Document.

5.1.1.2 Stage 2 Engagement

Stage 2 concentrates on how the design of the product will support and facilitate visitor engagement with the cultural heritage site and contains four processes which are now described. Using the results of the secondary research and the preliminary studies the researcher has devised and included in the *Guide* an engagement framework tool, details of which are in section 5.1.2.4 page 5-209. The framework is provided to support the creator in choosing appropriate design features to achieve the required engagement state/behaviour at each *'stage'* of the engagement process. Flowcharts for each process in Stage 2 are shown in figure 5-7 pp 5-188/189.



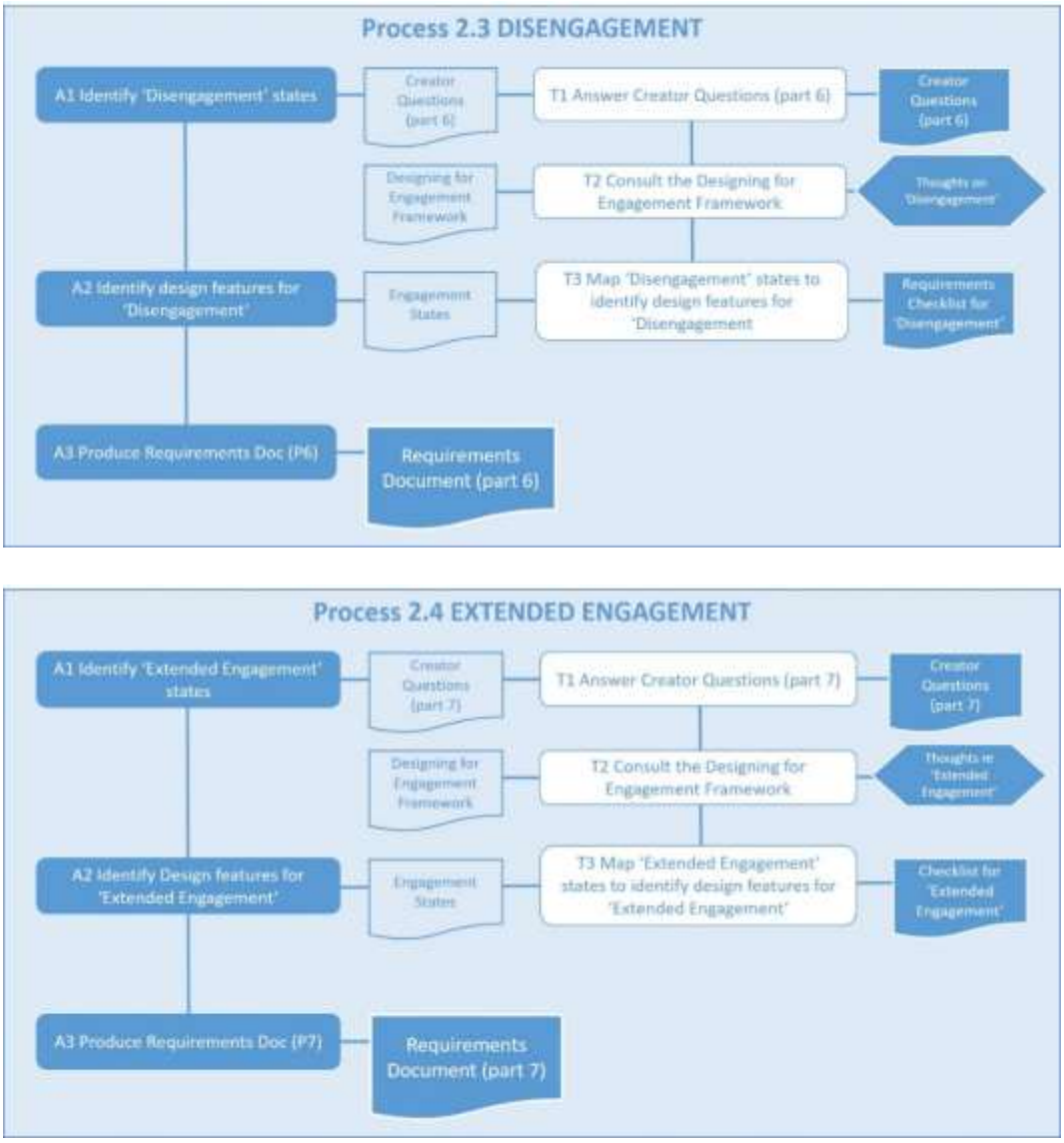


Figure 5-7 Stage 2 process flowchart (Wilkinson, 2018)

2.1 Attraction: focusses on how the visitor is initially attracted to engage with a specific feature. The creator must consider how the product will gain the visitor's attention and direct them specifically to an item. A series of questions are posed to encourage identification of ways in which the designer might attract the visitor. A range of design ideas, drawn from the results of the secondary research and preliminary studies, which might support the attraction of the visitor to the feature is also provided.

PROCESS 2.1: **ATTRACTION** *gaining audience attention*	
Suggested questions for designers/curators	**Design ideas to consider for attraction**
• How does the product 'attract' the audience? What is the hook? • What does the product make the audience stop and look? • Do you know what your audience finds attractive • Are you prepared to shock/challenge your audience to attract them? • Do you want your audience to discover things by themselves? • Does the product have a prescribed route to follow? • Does it matter if the audience does not see everything? • Does your product need to cope with an over-popular attraction? • How can your product provide 'pre-visit' attraction – tasters etc	• A prescribed route to keep people moving from place to place – with the visitor being attracted to the next location. • A 'guide' in the form of a person advising them where to go and what to look at • 'Shouting at them' – look at this, look at that/roll up • Location - triggered sounds • A visually attraction which invites the visitor to take a closer look • 'Challenges/tasks' for the visitor to complete

Figure 5-8 Process 2.1 summary (Wilkinson, 2018)

Activity 1 Identify attraction states: using the Creator Questions and the engagement framework for guidance the creator identifies the ways in which they would like their product to attract the visitor to their heritage with particular reference to the states of being *curious*, *attracted* and or *interested*. Visitors should typically experience one of more these states to be initially attracted to engage with the heritage.

Activity 2 Identify design features: requires the creator use the engagement framework to identify the most appropriate design features to achieve the attraction states they identified in tasks 2 and 3.

Activity 3 Produce Requirements Document: using the assessment of design features from the previous task the creator completes the Design Requirements Document describing how the design feature meets design requirement.

2.2 Absorption: focusses of which is how the visitor will engage with the feature once they stop and spend a period of time absorbed in that feature. At this point the visitor is now interacting with a specific feature of the heritage, for example, a building or an artefact. Absorption states have been further divided into three categories: *cognitive*, which includes *learning* and *understanding*; *emotional*, which includes *empathising*, *enjoying* and *having fun*; and those which are both *cognitive and emotional* including being *involved*, *immersed*, *interacting* and being *connected*. To be engaged with the

cultural heritage the visitor will need to experience one or more of these engagement states. The creator must consider how the product will sustain the visitor's engagement with the heritage and also clarify the nature of the visitor experience, for example, is the visitor intended to have a cognitive experience through which they might learn something, or a fun experience which might amuse them, or a mixture of both. A series of questions are posed to encourage identification of ways in which the digital media might absorb the visitor and a range of design ideas is provided.

PROCESS 2.2: **ABSORBTION** *focusing and keeping attention*	
Suggested questions for designers/curators	**Design ideas to consider for absorption**
• What sort of experience most meets the requirements of the context identified in Process 1: Context? • Are you looking for cognitive/emotional engagement or both and what will you include in the design to facilitate either? • Is this an interactive or a passive experience? • How long do you want the visitor to engage for? • How does your design support lengthy engagement • Is the product providing a personal or shared experience, or both? • How does the product manage engagement with both the location and the product itself? • How does the product activity add value and engage the visitor?	• Authentic content for those who want to learn • Layered content to allow for differences in audience need • Contextually appropriate information – relevant to the location • Present content in a variety of ways to accommodate visitor learning preferences • Include character and stories to encourage empathy, understanding and connection • Allow visit choice where ever possible • Create tasks for the visitor to achieve

Figure 5-9 Process 2.2 summary (Wilkinson, 2018)

Activity 1 Identify absorption states: using the Creator Questions and the engagement framework the creator identifies the ways in which they would like their product to absorb the visitor with the heritage.

Activity 2 Identify design features: using the advice in the Design Requirements Checklist the creator selects the appropriate design features to create the absorption states of engagement.

Activity 3 Produce Requirements Document: The creator finishes this process by completing the absorption section of the Design Requirements Document

2.3 Disengagement: focusses on how the visitor will *disengage* with the feature once they have completed their *absorption* stage of engagement. A good engagement process will ensure that *disengagement* is appropriate and easily managed leaving the

visitor satisfied with the completion of the visit. Consideration should also be given to unintentional disengagement and how this might be managed within the design of the product. How easy is it for the visitor to pause the engagement and pick up again if they become distracted? The creator must consider how the product will support the visitor's disengagement experience. A series of questions are posed to encourage identification of ways in which the designer might disengage the visitor.

Figure 5-10 Process 2.3 summary (Wilkinson, 2018)

Activity 1 Identify disengagement states: using the engagement framework and the Creator Questions the creator identifies ways in which they would like their product to complete the engagement of the visitor with the heritage. The engagement framework describes two states of *disengagement*: *leaving* and *being satisfied* and the visitor typically should experience one or more of these states to be appropriately *disengaged* with the heritage.

Activity 2 Identify design features: using the suggested design features in the Guide and Design Requirements Checklist the creator identifies the appropriate design features to create engagement states for *disengagement*.

Activity 3 Produce Requirements Document: The creator finishes this process by completing the disengagement section of the Design Requirements Document

2.4 Extended Engagement: The fourth process occurs when the heritage continues to impact on the visitor after the visit has been completed. This might also be described as legacy impact. Creators should consider whether this is something they would value and encourage and should design for it appropriately. *Extended engagement* has three states of engagement: *curious*, *inspired* and *interested*.

Figure 5-11 Process 2.4 summary (Wilkinson, 2018)

Activity 1 Identify extended engagement states: using the Creator Questions and the engagement framework the creator identifies ways in which their product might continue to engage visitor with the heritage after their visit.

Activity 2 Identify design features: using the suggested design features in the Guide and Design Requirements Checklist the creator identifies the appropriate design features to create engagement states for *extended engagement*

Activity 3 Produce Requirements Document: The creator finishes this process by completing the extended engagement section of the Design Requirements Document

5.1.1.3 Stage 3 Product Design

Stage 2 Product Design contains five processes: Specify, Design, Create, Test/Review and Launch. Flowcharts for each process is shown in figure 5-12 pp 5-194/194

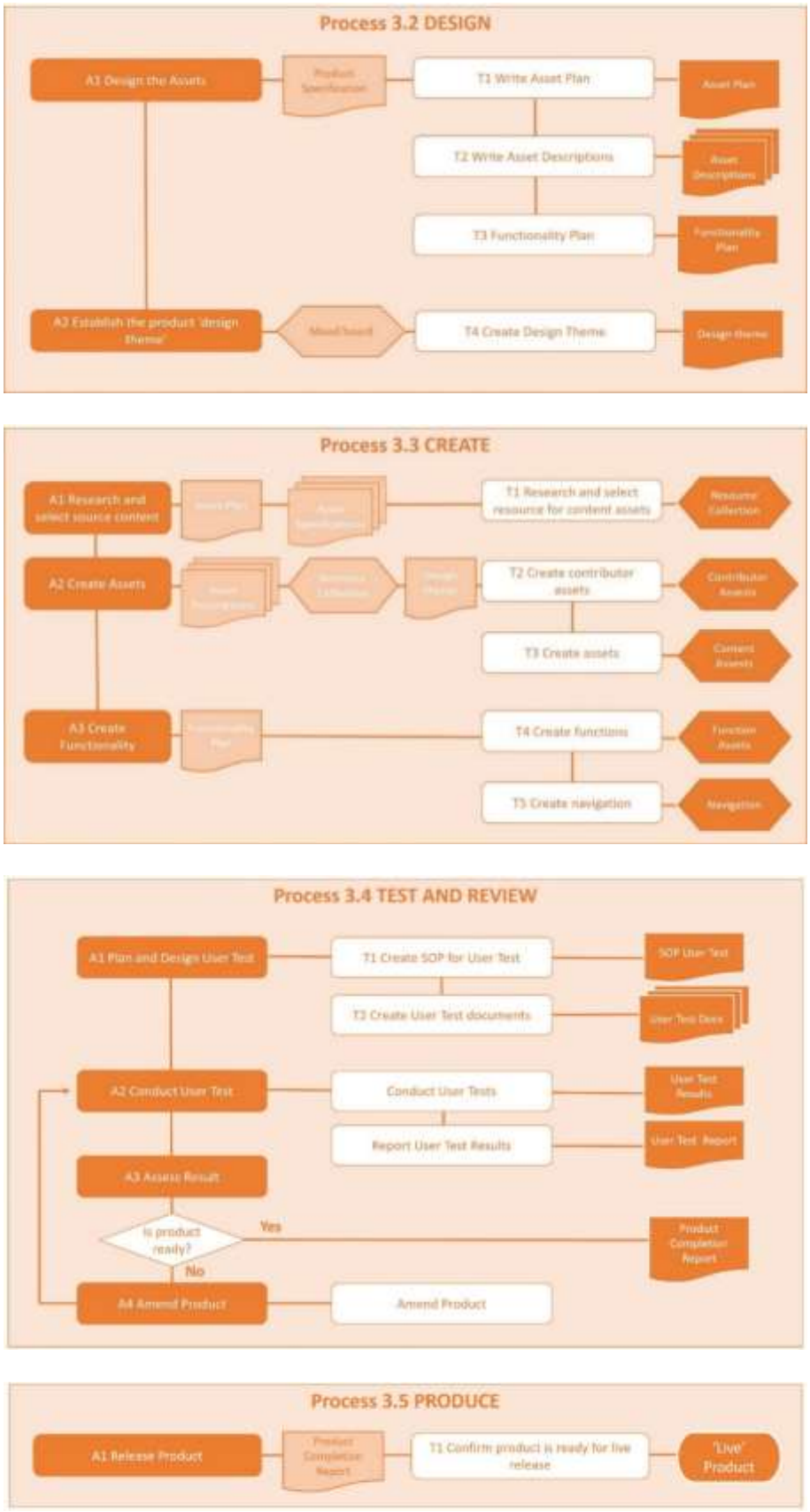


Figure 5-12 Stage 3 process flowchart (Wilkinson, 2018)

3.1 Specify: using the completed Requirements Document from the Pre Design Phase of the Guide the creator can now create a Product Specification Document for their product. The Guide provides a template for the Product Specification Document and example of which is in section 5.1.3.4, page 5-226.

3.2 Design*:* is comprised of two activities from which four outputs are required: an *Asset Plan, Asset Specifications*, a *Functionality Plan* and a *Design Theme.*

> **A1 Design the Assets:** requires the creator to write asset plan; the asset specifications; and the functionality plan. The *Asset Plan* contains details of all the items identified in the *Product Specification Document*. The *Asset Specifications* document contains details of each item used in the product including such details as: the name of the asset; a contextual description; where it will be used in the product; the source of the item; a file name; a file type of the final digital asset; and copyright and reference information for source content. The *Functionality Plan* explains how the product will work and provides information on functionality and visitor navigation through the product. Interactive elements such as buttons and other user controlled aspects of the product are described in this plan. Templates for these documents are provided in the *Guide* and an examples are available in section 5.1.3.5 page 5-227.
>
> **A2 Establish the Product Design Theme**: requires the creator to create the design theme for the product. Using the mood-board created in the Pre-Design phase of the framework the creator will write the Design Theme which will identify visual and audio themes and tones to be used throughout the design of the product

3.3 Create: is comprised of three activities which produce five outputs are created by this process: a *Resource Collection*, *Contributor Assets*, *Content Assets*, *Function Assets* and *Navigation* functionality. Using the *Asset Plan* and the *Asset Specifications* the creator collates a collection of suitable resources to build the digital media. At this stage resources might include text, audio, images or video. The creator then converts the

resources into usable assets for product. The second activity includes two tasks, creating the contributor assets - items which will be used to create main assets, such as storyboards for videos, scripts for stories, and creating the main digital content. Finally the creator will use the information in in the *Functionality Plan* to create the user interactivity and navigation of the product.

3.4 Test and Review: is comprised of three activities producing four outputs : a standard operating procedure for product testing, test documents to be used in the product testing, the actual product test results, a *Product Test Report* and a *Product Completion Report*, signalling that the prototype has now been tested for overall functionality and is working correctly.

3.5 Produce: is comprised of one activity which is to confirm that the product has been sufficiently tested and is now ready for release.

5.1.1.4 Stage 4 Product Launch

Results for the preliminary studies highlighted some degree of marketing and promotion and there is evidence that products were officially launched and publicised, however many were under publicized or under promoted resulting in a lack awareness of the existence of the product and minimal take up and use by visitors. To address this problem Stage 4 proposes the following good practice regarding the promotion and marketing of digital interpretation products. This study recognises that marketing and promotion are complex professional activities and that this study is not presenting a full or comprehensive account of all the activities required at this stage, but is providing an initial overview of what should be initially and typically considered by those involved with the product. Three processes are identified within this stage: *Marketing Plan; Launch Campaign*; and *Product Launch*.

4.1 Marketing Plan focusses on activities to market the product, make the intended audience aware of the product and encourage use of the product.

4.2 Launch Campaign focusses on activities to include in a campaign to launch the product, publicise its use and gain initial interest in the product.

4.3 Product Launch focusses on the actual launch even for the product

Note that this stage does not form a major part of this study and has not been tested by the prototype product and so this description is limited to being a proposal for good practice and is not presented as being complete or comprehensive. A summary of this stage, including a brief description for each process and the anticipated issues and tasks associated with this process is provided in figure 5-14 page 5-201.

5.1.1.5 Stage 5 Project Evaluation

Results for the preliminary studies highlighted a lack of consideration and activity regarding evaluation of the overall project once the digital interpretation product was in operation. A general lack of evaluation and insufficient budget for or planning of evaluation was identified. To address this problem Stage 5 proposes the following good practice regarding the evaluation digital interpretation projects. Four processes are identified within this stage: *Outcomes*, *Unexpected Outcomes*, *Further Development* and *New Opportunities*.

5.1 Outcomes proposes activities to assess how the project has met the intended outcomes.

5.2 Unexpected Outcomes proposes activities to identify unexpected outcome of the project, both positive and negative.

5.3 Further Development considers what additional work might be necessary to the existing product to maintain its functionality and relevance.

5.4 New Opportunities considers what new opportunities might now be available as a result of this project.

Note that this stage does not form a major part of this study and has not been tested by the prototype product and so this description is limited to being a proposal for good

practice and is not presented as being complete or comprehensive. A summary of *Stage 5 Project Evaluation*, including a brief description for each process and the anticipated issues and tasks associated with this process is provided in figure 5-15 page 5-202.

5.1.1.6 Stage 6 Live Operation

Results for the preliminary studies highlighted a lack of consideration and activity regarding the live running of the product once it was in operation with instances of products not being maintained or updated, insufficient budget to support upgrades and a lack of expertise or technical access to the product to improve or add to content. To address this issue Stage 6 proposes the following good practice regarding the live operation of digital interpretation products. Three processes are identified within this stage: *Updates, Maintenance* and *Review*.

6.1 Updates examines what activities might be required during the life span and live operation of the digital product to keep it up to date.

6.2 Maintenance examines what activities might be required during the life span and live operation of the digital product to keep it in regular working order

6.3 Review examines what activities might be required during the life span and live operation of the digital product and assess the ongoing success of the project.

Note that this stage does not form a major part of this study and has not been tested by the prototype product and so this description is limited to being a proposal for good practice and is not presented as being complete or comprehensive. A summary of *Stage 6 Live Operation*, including a brief description for each process and the anticipated issues and tasks associated with this process, is provided in figure 5-16 page 5-203.

5.1.1.7 Stage 7 Product Removal

Preliminary studies highlighted issues relating to the ongoing lifespan and consequent legacy of digital media products, in particular noting that some apps were found to have been removed from usage even though they were still operational and capable of providing a valid visitor experience. This stage addresses the end of the product life cycle

and encourages the creator to consider how long the product will be able to offer a suitable visitor experience, what they might replace it with and how they might evaluate the overall legacy and impact of their product. Four processes are identified within this stage: P*roduct Removal, Product Replacement, Product Review* and *Legacy*.

7.1 Product Removal requires the curator to consider when and how their product should be removed. Every product has a natural life cycle and at some point the product will become obsolete. This process should be planned and managed to avoid outdated interpretive digital media being inadvertently made available to visitors as this could impact on the overall impression of the heritage site.

7.2 Product Replacement focusses on life after the current digital product and contemplates what, if anything, might replace the current produce once it has reached the end of its lifespan.

7.3 Product Review requires an overall review of the product to assess general functionality and overall success.

7.4 Legacy requires assessment of the overall legacy of the digital product, what has been achieved and the lasting impact the product has had on the relationship of the visitor with the heritage. As part of this process it is recommended that a review of the product is undertaken to determine how well the product has met the original design criteria in terms of engagement as identified it the original *Product Specification Document*.

Note that this stage does not form a major part of this study and has not been tested by the prototype product and so this description is limited to being a proposal for good practice and is not presented as being complete or comprehensive. A summary of *Stage 7 Product Removal*, including a brief description for each process and the anticipated issues and tasks associated with this process is provided in figure 5-17 page 5-204.

Stage 3: Product Design

Processes:

P3.1: **SPECIFY**

P3.2: **DESIGN**

P3.3 **CREATE**

P3.4 **TEST AND REVIEW**

P3.5 **PRODUCE**

P3.1 SPECIFY

Activities	Outputs
• Specify the design requirements for the product (using the Requirement Document created in the Pre-Design phase of the framework) • Write the Product Specification	• Product specification

PROCESS 3.2 DESIGN

Activities	Outputs
• Design the assets and identify contributor assets (eg: scripts/storyboards/audio files) required for the presentation of the content and the functionality of the product (stories, animations, text, navigation buttons, user control buttons etc • Establish product 'theme' (using tools such as mood boards establish what the 'look and the feel' is for the product – how does this fit the identity of the place being interpreted, the purpose of the product and the audience using the product?) • Write the Asset Specifications, Asset Plan Functionality Plan and Design Theme	• Asset Specifications • Asset Plan • Functionality Plan • Design theme

PROCESS 3.3: CREATE

Activities	Outputs
• Research and select source content (using the Asset Plan and Asset Specifications from the previous Process to generate a collection of required resources such as (text, images, audio files, video files etc) • Create assets and contributor-assets (scripts, storyboards, narration etc) as outlined in the Asset Plan, Asset Specifications, and Design Theme • Create functionality and navigation using the Function Plan	• Resource collection • Content Assets • Contributor • Function Assets • Working prototype product

PROCESS 3.4: TEST AND REVIEW

Activities	Outputs
• Plan and design user test (observation, questionnaire, site visits, focus groups, usability, accessibility, user acceptance – see guidance on User Testing Design) • Create User Test SOP • Create user test documents required by SOP (questionnaires, surveys, interview scripts) • Conduct user testing • Assess results and make recommendations • Review and amend product (repeat the test process until product is functioning correctly and achieves user acceptance)	• SOP User Testing • User Test documents • User Test Report with results of the tests and recommendations for improvement

PROCESS 3.5: PRODUCE

Activities	Outputs
• Confirm product meets requirements as stated in the Product Specification and is functioning correctly	• Working product ready for 'live launch'

Figure 5-13 Stage 3 product design (Wilkinson, 2018)

Stage 4: Project Launch

Processes:

P4.1: **MARKETING PLAN**

P4.**2:** **LAUNCH CAMPAIGN**

P4.**3** **PRODUCT LAUNCH**

P4.1 **MARKETING PLAN**

Issues for the designers/curators to consider	**Suggested Tasks and Activities**
• How will visitors know that the product exists? • How will the launch of the product be publicised? • How will you promote this product to the appropriate audience? • Will there be a conscious effort to promote and market the product • Will the product be used to promote and/or market the cultural heritage site, if so, in what way • What marketing materials will be most effective with the target audience • Do you have the skills to do this – do you need to subcontract this to a marketing professional? • What budget or resources are there for marketing and promotion?	• Identify the target audience • Devise a marketing plan

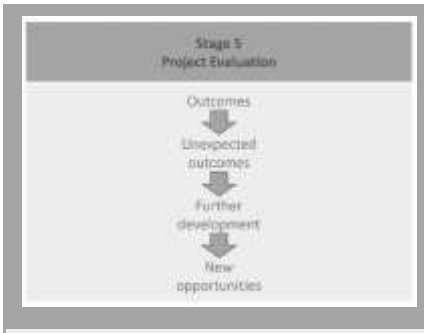
PROCESS 4.2 **LAUNCH CAMPAIGN**

Issues for the designers/curators to consider	**Suggested Tasks and Activities**
• How will the product be launched • How long will the launch campaign last? • What will be the reach and scope of the launch campaign? • How is the target audience for the launch campaign? • What activities might be included in the campaign? • Who is going to be involved? Is there a 'champion' who can help promote the product? • Do you have the skills to do this or would it be beneficial to involve someone with some campaign expertise • What on-line resources and tools could you use? • What budget or resources are available to run and support a campaign? • What publicity avenues are available to you?	• Identify appropriate activities for a launch campaign • Devise a plan for the launch campaign

PROCESS 4.3: **PRODUCT LAUNCH**

Issues for the designers/curators to consider	**Suggested Tasks and Activities**
• What needs to be done to finalise the product and make it fully ready to launch?	• Ensure product is fully ready to launch • Devise an appropriate marketing strategy and launch campaign (see Processes above)

Figure 5-14 Stage 4 project launch (Wilkinson, 2018)



Stage 5: Project Evaluation

Processes:

P5.1: **OUTCOMES**

P5.2: **UNEXPECTED OUTCOMES**

P5.**3** **FURTHER DEVELOPMENT**

P5.4 **NEW OPPORTUNITIES**

P5.1 **OUTCOMES**

Issues for the designers/curators to consider	Suggested Tasks and Activities
• Measure the outcomes of the project by comparing with original project objectives (Stage 1: Context and Stage 2: Engagement) • Has the product done what it was designed for? • Has the project achieved the intended level of engagement with the heritage site?	• Design a Project Evaluation plan to include evaluation by visitors, the designer and the curator. • Use a variety of evaluation tools including observation, site visits, questionnaires, surveys and focus groups. • Evaluate outcomes against intended outcomes

PROCESS 5.2 **UNEXPECTED OUTCOMES**

Issues for the designers/curators to consider	Suggested Tasks and Activities
• What unexpected outcomes of the project have been identified? • What unintended consequences of the project have been identified? • What added benefits have happened?	• Include unexpected outcomes in the Project Evaluation plan

PROCESS 5.3: **FURTHER DEVELOPMENT**

Issues for the designers/curators to consider	Suggested Tasks and Activities
• What happens next – for this product/project? • How can you develop this product further? • What success factors could you build on for this product? • What could this product do more of? • What else could this product do? • Are there obvious and clear additions which could be made to the existing product (new points of interest, new stories, a new theme? • Where will the funding come from for further developments (additional grants/income generation/monetisation of the product)?	• Devise a development plan for the product

PROCESS 5.4: **NEW DEVELOPMENTS**

Issues for the designers/curators to consider	Suggested Tasks and Activities
• What happens next in terms of using interpretive digital media? • What other areas of the cultural heritage site might benefit from interpretive digital media? • What collaborative opportunities might there be for working with other groups (heritage sites, research groups, special interest groups etc) • How can new developments be funded (grants/income generation/commercialisation)?	• Devise a development plan for the cultural heritage site

Figure 5-15 Stage 5 project evaluation (Wilkinson, 2018)

Stage 6: Live Operation

Processes:

P6.1: **UPDATES**

P6.**2:** **MAINTENANCE**

P6.**3** **REVIEW**

P6.1 **UPDATES**

Issues for the designers/curators to consider	Suggested Tasks and Activities
• What will trigger updates in the product? • How long will the content be valid and appropriate? • How long will it be before the audience requires new content? • How long will the content look and feel contemporary – at what point will it become dated and need refreshing? • What budget do you have for updates? • Are updates likely to be sporadic or regular – and how might you plan for them?	• Develop and Update Plan

PROCESS 6.2 **MAINTENANCE**

Issues for the designers/curators to consider	Suggested Tasks and Activities
• Are there any parts of the product which will need regular maintenance? • How robust is the hardware platform? How long will it last before it needs maintenance work? • What maintenance might need to be done to the software to keep it operational? • What maintenance measures might the hosting supplier require from you? • What budget do you have for updates? • What budget do you have for continuous hosting?	• Develop a Maintenance Plan

PROCESS 6.3: **REVIEW**

Issues for the designers/curators to consider	Suggested Tasks and Activities
• How do will the product be reviewed in terms of continued viability? • How frequently should the product be reviewed to ensure it is still meeting the purpose for which it was created?	• Review Plan

Figure 5-16 Stage 6 live operation (Wilkinson, 2018)

Stage 7: Product Removal

Processes:

P7.1: **PRODUCT REMOVAL**

P7.**2:** **PRODUCT REPLACEMENT**

P7.3 **PRODUCT REVIEW**

P7.4 **LEGACY**

P7.1 **PRODUCT REMOVAL**

Issues for the designers/curators to consider

- When will the product life-cycle be complete, at what point do you anticipate the product will cease to have relevance and become redundant or outdated
- What measures will be needed to remove the product when it becomes obsolete and/or redundant?
- How will users of the product be informed of the change
- How will the process of removal be managed?
- Who will be responsible for overseeing the removal?
- How will you ensure that products which use internet functionality are completely removed from the web?
- How will you manage any user-generated content which has been created?
- When does the 'hosting' budget/period run out?

Suggested Tasks and Activities

- Devise a Product Removal Plan
- Consult Web experts where necessary to ensure clean and complete removal
- Devise a visitor/customer communication plan to publicise and if necessary negotiate product removal

PROCESS 7.2 **PRODUCT REPLACEMENT**

Issues for the designers/curators to consider

- What next! Consider what will replace the product
- What's changed since this product was launched?
- What are the key issues which a new product should address

Suggested Tasks and Activities

- Undertake review of existing product to identify future opportunities (see next Process)
- Use the DFIDM to design and develop your next interpretive digital media product!

PROCESS 7.3: **PRODUCT REVIEW**

Issues for the designers/curators to consider

- How well did the product do?
- How well did the product function?
- How well used or popular was the product?
- What does your ongoing visitor feedback tell you about the usefulness of the product?
- What went well in the overall project?
- What lessons have you learned and what would you do differently next time?

Suggested Tasks and Activities

- Undertake a review of the product in terms of functionality and how well it met the success criteria as identified in the original Product Specification

PROCESS 7.4: **LEGACY**

Issues for the designers/curators to consider

- What impact has the product had on the visitors to the cultural heritage
- What impact has the product had on those who curate the cultural heritage
- What impact has the product had on the cultural heritage itself – for example is it better appreciated, more widely known about, more regularly visited?
- Has the product brought in additional visitors?
- Has the product enabled the development of new audiences for this heritage site?
- What unintended consequences have occurred as a result of this product being in use?

Suggested Tasks and Activities

- Undertake a review of the product in terms of impact and how well it met the success criteria in terms of engagement, as identified in the original Product Specification

Figure 5-17 Stage 7 product removal (Wilkinson, 2018)

5.1.2 Design Guide Tools

The guidance provides tools as a resource to support creators in the design of their digital product. The first of these is the Requirements and Features Grid, figure 5-18 below, which can be used to help creators map their requirements to potential features.

5.1.2.1 Requirements and Features Grid

Stage 1: Context	
Process 1.1 Purpose	
Requirement	**Feature**
Connect the visitor to the location	Information meaningful to the visitor
	Information relevant to the location
Provide information about the location	Information relevant to the location
Create a relationship between the visitor and the location	Information meaningful to the visitor
	Information meaningful to the location
Promote the heritage to new audiences	Information about the location
	Presentation methods attractive to new target audience
	Information attractive to new target audiences
Provide a 'rich' interpretation of the heritage	Mixed presentation methods
	Multi-media presentation methods
	Audio
	Images
	Video
	Animation
	Narrated stories
	Written stories
	User generated content
	Games
	User interaction
	Layered information
Change attitude of the visitor towards the location	Information relevant to the location
	Evocative content - stories
	Evocative content - people/characters
To help the visitor do	Instructions
To help the visitor know	Information relevant to the location
To help the visitor understand	Information meaningful to the visitor
To help the visitor feel	Information meaningful to the visitor
	Evocative content - stories
	Evocative content - people/characters
To provide an experience at the location	Location-aware functions - trigger content
	Location-aware functions - track visitor
	Location-aware functions - guide visitor
	Augmented reality
Bring history to life'	Evocative content - stories
	Evocative content - people/characters
	Augmented reality
	Immersive content - stories
	Immersive content - sounds
Reveal 'invisible' heritage	Images
	Augmented reality

Stage 1: Context	
Process 1.2 Location	
Requirement	**Feature**
Reveal invisible heritage	Images
	Augmented reality
Operate outdoors	Robust hardware platform
Operational in bright sunshine	Adjustable screen display
	Locate focus points in shade
Operational in rain	Robust hardware platform
	Work in pocket
Operational whilst visitor is moving (running/walking)	Work in pocket
Consider visitor physical endurance	Locate focus points near seating
	Appropriate length of physical navigation route (distance)
	Appropriate length of stay at a focus point (duration)
	Appropriate length of visit (duration)
Encourage visitor to look at location	Instruction
	Locate focus points near something visible/contextual in the location
Encourage visitor to listen to the location	Instruction
Operational in noisy conditions	Headphones
Support visitor safety and security	Safety instruction
	Locate focus points in safe locations
Facilitate visitor interaction with location	User-generated content
	Social media functionality
	Location-aware functions - trigger content
	Location-aware functions - track visitor
	Location-aware functions - guide visitor
	Tasks to do on location
Engage the visitor with the location	Locate focus points in appropriate contextual locations
Connect the visitor with the location	Contextual information - a map
	Contextual information - a navigational route
Maintain connection with the location	Authentic proximity and integrity of content
	Appropriate level of immersion
Availability of Wi-FI	Pre downloaded content
Limited availability of Wi-FI	Minimise data usage
	Reduce asset sizes to minimum

Stage 1: Context	
Process 1.3 Audience	
Requirement	**Feature**
Used by children	Age specific content
	Age specific delivery
Used by adults	Age specific content
	Age specific delivery
Visitor motivation - to learn	Information
Visitor motivation - to have fun	Games
	Entertaining content
Visitor motivation - to understand	Information meaningful to the visitor
	Evocative content - stories
	Evocative content - characters/people
Visitor motivation - to share experience	Social media functionality
	User-generated content
Visitor motivation - to interact with others	Social media functionality
	User-generated content
Visitor motivation - to contribute to the experience	User-generated content
Visitor new to location	Information
Visitor already in relationship with the location	Layered information
Visitor a regular user of the location	Frequent additions to content
Support the length of visitor stay	Appropriate length of visit experience
Support visitor learner preferences	Multi-media presentation
	Mixed-media presentation
Support communication preferences - visual	Images and photographs
	Animations
	Video
Support communication preferences - audio	Sound effects
	Narration
Support communication preferences - reading	Written word
Attract new audience	Presentation methods attractive to new target audience
	Information attractive to new target audiences
Support the interest of the visitor	Information attractive to the visitor

Figure 5-18 Requirements and Features Grid (Wilkinson, 2018)

5.1.2.2 Location Identity Grid

Creators can use the Location Identity Grid, figure 5-19 below, to help them gain a better understanding of their heritage location.

Figure 5-19 Identity-Location Grid (Wilkinson, 2018)

5.1.2.3 Visitor Interest Survey - Standard Operating Procedure

This is a suggested procedure for undertaking a visitor interest survey to ascertain what people think of the heritage.

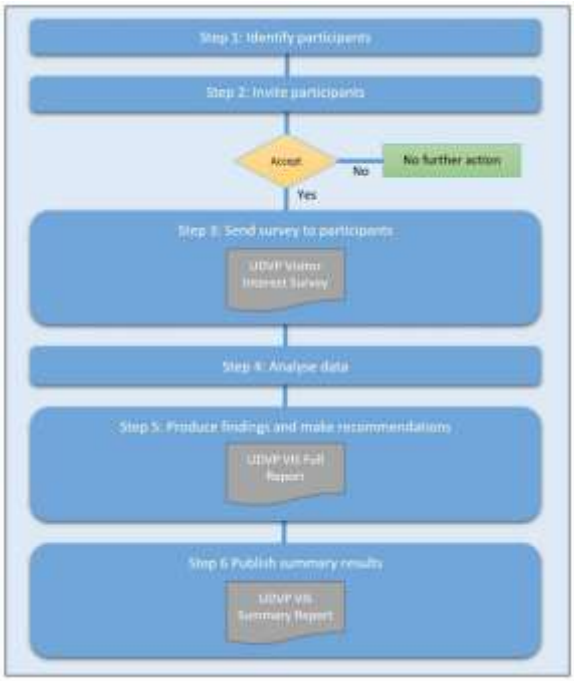


Figure 5-20 Visitor Interest Survey SOP (Wilkinson, 2018)

5.1.2.4 Engagement Framework

Figure 5-21 Engagement Framework (Wilkinson, 2018)

Derived from the results of the literature review and the primary research, particularly the results of the Mobile Apps study the engagement framework proposes an '*language for engagement'* incorporating the '*stages'* of an engagement process and the behavioural *'states of engagement'* which might be experienced within each *'stage of engagement'*. The framework is now described in more detail.

5.1.2.4.1 Stages of Engagement

The framework proposes four *'stages of engagement'*: *attraction, absorption, disengagement* and *extended engagement*. A description of these *'stages of engagement'* and the rational for inclusion follows.

Attraction: The first stage of engagement is '*attraction'*. Bitgood's Attention-Value Model (2010) and Edmond's model for engagement (2006) are examples of models which identify attraction as the first stage in the engagement process. Fosh's (2013) work on participant trajectories describes the importance of 'approach' as the first stage of engagement. These studies emphasise that engagement begins with an act of being attracted, moving towards an object and choosing to engage further. Results of the Mobile Apps study further support the importance of including attraction as the first stage of engagement with strong evidence to demonstrate the power of such design features as locative sound to pique interest and attract people towards a particular location.

Absorption: The second stage of engagement is '*absorption'*: the point at which the visitor stops, looks, considers, interacts with and/or reflects on the object/heritage item. Building on the historical and typically used measures of dwell time, levels of attention, learning, personal meaning and sense making (Bitgood, 2010; Falk and Dierking, 2000/2012; Kelly, 2007), the framework also proposes activities and experiences such as *having fun* and experiencing *empathy* providing for both cognitive and emotional engagement. Models of museum learning and visitor engagement such as *The Selina Model of Visitor Learning* (Perry, 2012) and the *Hierarchy of Visitor Engagement* (Morris Hargreaves and McIntyre, 2005) as well as Norman's work on user experience (2004), McCarthy and Wright's *threads of experience/six sense making process* (2003) and Costello's *Pleasure Framework* (2007) emphasise the importance of experience beyond learning. Consequently the *'absorption'* stage of engagement includes both cognitive and emotional states of engagement.

Disengagement: The third stage of engagement recognises that visitors should move on from their absorption stage of engagement in a manner and at a time which is appropriate for them. The activity of *disengagement* is the conclusion of an adequate and satisfying experience in which the visitor has gained as much as they deem necessary. Ideally their level of interpretation of the heritage will mirror the intended objectives of the heritage practitioners and the engagement experience they were wanting to deliver. Fosh's work on participant trajectories (2013) is useful in informing the framework; emphasising the value of managed disengagement and appropriate closure of engagement with each item and the location.

Extended engagement: A complete engagement processes does not necessarily end when the visitor physically leaves the location and the framework proposes a fourth and final stage of engagement, described as *extended engagement*, in which the visitor can have opportunities to maintain an on-going relationship with the heritage site beyond the single visit experience. Good examples of extended engagement have been drawn upon from studies discussed in the literature review (Ciolfi and McLoughlin, 2012).

5.1.2.4.2 States of Engagement

The framework describes 17 *'states of engagement'*, identified from the results of the secondary research and preliminary studies. A description of these *'states of engagement'* and the rationale for inclusion follows.

Attraction States of Engagement: The framework proposes three *'states of engagement'* associated with the engagement stage of *attraction*. These experiences include being *curious*, being *attracted* and being *interested*. A description of each of these *states* follows:

Curious: A visitor will spend time visiting a location or engaging with a feature if they are made curious enough to look. The Sounds app uses sounds successfully to attract people to specific locations within the Cultural Quarter. Once at that location visitors typically look to see how that sound relates to that place, their curiosity is aroused and they are looking at something and thinking about it. They have transitioned from attraction to absorption. Another way of making a visitor curious about a location is through instruction, telling them to go and look at something but not necessarily explaining why, like a puzzle that they have to solve (Fosh, 2013; Vazquez-Alvarez et al., 2015; Hazzard, 2015)

Attracted: People can also be attracted to a location because they are following instructions to go a place (Dow et al, 2005 and Wither et al, 2010). This method was used by the Stories app which presents the visit as a prescribed route with points on a map which are to be followed. Likewise the Civil War app requires the visitor to go to a location and use a QR code to access more information. In this example the promise of a reward is also used to attract the visitor to a particular location.

Interested: The visitor needs to be provided with sufficient information to have an interest in cultural heritage. To encourage the visitor to visit a site this might be done through advertising with sufficient information to tempt the visitor to invest time in engaging further. Once on site a visitor can be attracted to specific features or locations with 'taster' information.

Absorption States of Engagement: The framework proposes nine *'states of engagement'* associated with the engagement stage of absorption. These behaviours and experiences include *learning*, *understanding*, empathising, enjoying, having fun, feeling *involved*, feeling *immersed*, *interacting*, and feeling *connected* with the heritage/location. A description of each of these states follows:

Learning: Findings from the preliminary studies confirm that learning something new and discovering more about a topic is a key motivator for many visitors and therefore an important state to achieve if they are to engage and be absorbed with the cultural heritage. To fully facilitate this state information should be authentic, specifically related to the cultural heritage, sufficient to provide new or additional knowledge and delivered in ways which can meet the learning preferences of the visitor (Wither et al, 2010, Fitzgerald et al, 2013).

Understanding: Similar to learning in that it is a cognitive state but different as it requires the visitor to not only know something but be able to relate to it or make a judgement about it in some way. As with learning the provision of information is key to achieving this state and it should be both integral to the heritage and meaningful to the visitor. Information should also be stimulating and consideration should be given to how this might be achieved through use of mixed delivery techniques such as audio and visual media (Reid et al., 2005 and Wither et al 2010).

Empathising: To engage on an emotional level visitors need to be able to relate to the cultural heritage in a personal way. Effective ways to achieve this can be through the use of characters, people and storytelling (Reid et al., 2005; Ballagas et al, 2007; Carrigy et al, 2010).

Enjoying: Engaging with cultural heritage can be achieved through enjoyment. If this enjoyment is considered to be an important part of the experience and appropriate for the target audience this can be achieved by including challenging activities or elements which encourage visitors to share the experience of their visit (Facer et al., 2004; Huizenga et al., 2007; Ballagas et al., 2007)

Having Fun: As with enjoyment having fun might be considered important for a rich engaging experience. Challenging activities, opportunities to share content or contribute to the content, gamification and including amusing content will support the achievement of this engagement state (Huizenga et al., 2007; Ballagas et al., 2007; Carrigy et al, 2010).

Involved: Important for both cognitive and emotional engagement visitors will feel involved with the cultural heritage when they are able to interact with it in some way. This can be achieved by doing something that requires the visitor to use their senses, for example being required to look at something, listen to something, move around an area, touch or feel an object etc. (McGookin et al., 2012; Ciofi and McLoughlin, 2012).

Immersion: An engagement state typically found in game design and is a powerful way of engaging audiences and providing a rich and impressive experience. Creators need to be mindful of the extent to which they seek to immerse their visitors as there may be implications for visitor safety and also problems of distracting attention from the actual heritage site. Typical ways of providing suitable levels of immersion would be through the use of stories and sound. Visitors who experience immersion during the visit might describe this as being transported to another place, or bringing history to life (Ballagas et al., 2007; Vazquez-Alvarez et al., 2012; Hazzard et al., 2012).

Interacting: Visitors who are absorbed with the cultural heritage will typically be interacting with the heritage in some way, reading about it, listening to something, discussing the heritage with other people, thinking about the heritage, making sense of it for themselves (McGookin et al., 2012; Ciolfi and McLoughlin, 2012). Engaging experiences will be facilitated by design features with support these activities. Evidence of this was observed by the researcher during the Mobile Apps study with participants discussing stories and acting out dialogue.

Connected: Visitors will feel connected to the heritage when they are able to make meaning for themselves. Information which relates to both the heritage and the visitor will facilitate this engagement state (Reid et al., 2005 and Ciofi and McLoughlin, 2012).

Disengagement States of Engagement: The framework proposes two *'states of engagement'* associated with the engagement stage of *disengagement*. These behaviours and experiences include *leaving* and *being satisfied* with the experience (Fosh et al., 2013). A description of each of these states follows:

Leaving: Procedures for leaving the visit experience should be easily understood and managed by the visitor. Ideally visitors should be able to pause their experience and re-activate it with minimum distraction. This is typically achieved with good navigational design. An appropriate protocol for completing the visit should be included in the design.

Satisfied: An appropriate protocol for completing and leaving the visit experience should be clear to the visitor and easy to implement such that the visitor can initiate this process once they feel satisfied that their visit is complete.

Extended Engagement States of Engagement: The framework proposes two '*states of engagement'* associated with the engagement stage of *extended engagement*. These behaviours and experiences include being *curious*, being *inspired* and being *interested*. A description of each of these states follows:

Curious: To achieve successful extended engagement visitors would need to continue to be curious about the cultural heritage. This can be achieved through the provision of further information and perhaps follow on challenges. These features might be delivered through the product used on the visit or via a website or built though other relational mechanisms such as newsletters, blogs, on-line games etc.

Inspired: Findings from the preliminary studies indicate that visitors felt inspired to know more about the cultural heritage whilst they were on their visit. Access to further information on the stories, events and characters though a website would facilitate and support this interest.

Interested: Extended engagement can be supported by retaining the visitor's interest in the cultural heritage. This could be done through further digital content being made available off site via websites, newsletters, blogs etc (Ciolfi and McLoughlin, 2012)

5.1.2.4.3 Design Features for States of Engagement

The framework suggestions design features for each state of engagement, which could be included in the design of the interpretive digital media product to facilitate and support effective achievement of that state. Figure 5-22 page 5-215 provides an overview of each state of engagement and the associated design features.

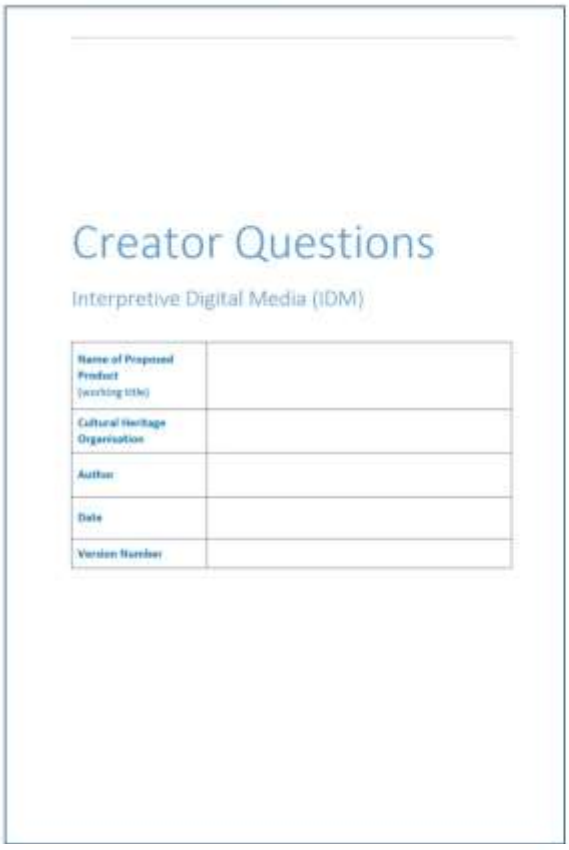
Design features to support *'States of Engagement'*	
Curious	Sound Instruction
Attracted	Sound Instruction Reward
Interested	Information
Learning	Information – authentic Information – sufficient Information – delivery matches to visitor learning preferences
Understanding	Information – integral to the heritage Information – meaningful to the visitor Information – immersive and evocative content
Empathising	Stories People/Characters
Enjoying	Challenging activity Sharing activity
Having Fun	Challenge activity Sharing activity Games Amusing activity
Involved	Interactive activity – listening/looking/touching/moving
Immersed	Sound Stories Visual information
Interacting	Looking / Reading / Listening / Discussing / Thinking
Connected	Information to relate the visitor with the heritage Activities to relate the visitor to the heritage
Leaving	Instruction Completion
Satisfied	Completion
Curious	Information Challenge
Inspired	Information Stories Characters Challenge
Interested	Information Stories

Figure 5-22 States of Engagement Design Features (Wilkinson, 2018)

5.1.3 Design Guide Documentation

The guidance provides template documents for designers to complete to inform the design of their product. The first of these is the Creator Questions.

5.1.3.1 Creator Questions



Creator Questions

Interpretive Digital Media (IDM)

Name of Proposed Product (working title)	
Cultural Heritage Organisation	
Author	
Date	
Version Number	

Stage 1: Context

Part 1	Process 1.1 Gather information for purpose
What do you want to achieve?	
What do you really want to achieve?	
What is the story you want to tell?	
What does engagement look like in the context of your location?	
What do you want the audience to do/know/feel as a result of using this product?	
How are the following experiences important in the context of your visitor experience: learning, understanding, enjoying, feeling, appreciating something?	
Why mobile? Could you do this as effectively with paper?	
What don't you want?	

Part 2	Process 1.2 Gather information for place
What are the defining features of this location from the point of view of the curator?	
What are the key features of this location from the visitor's point of view?	
What is the nature of this place: cultural, social, physical?	
How do people appropriate this place for their own use – and how does your product allow them to do this?	
How does this product enable people to engage with the location?	
How does your product enhance the place?	
How does your product create a meaningful relationship between visitor and place?	
How does your product allow a visitor to interact with, adapt and appropriate the place?	
How does your product convert a 'space' to a 'place'?	

Part 3	Process 1.3 Gather information for audience
Who is likely to use this product?	
What is their connection to this place (knowledge/interest/experience/usage)?	
How will you segment your audience/visitors?	
Who will you pitch your product at? Who is your main audience?	
What do the target audience want from their visit?	
Are you looking for new audiences/visitors?	
What are you visitors' motivations in coming to this place?	
What's going to stop your audience/visitor engaging with the place and/or your product	
In what context will the visitors use this product (alone, in family groups, with others?)	

Stage 2: Engagement

Part 4	Process 2.1 Attraction
How does the product 'attract' the audience? What is the hook?	
What does the product make the audience stop and look?	
Do you know what your audience finds attractive?	
Are you prepared to shock/challenge your audience to attract them?	
Do you want your audience to discover things by themselves?	
Does the product have a prescribed route to follow?	
Does it matter if the audience does not see everything?	
Does your product need to cope with an over-popular attraction?	
How can your product provide 'pre-visit' attraction – tasters etc	

Part 5	Process 2.2 Absorption
What sort of experience most meets the requirements of the context identified in Process 1: Context?	
Are you looking for cognitive/emotional engagement or both and what will you include in the design to facilitate either?	
Is this an interactive or a passive experience?	
How long do you want the visitor to engage for?	
How does your design support lengthy engagement	
Is the product providing a personal or shared experience, or both?	
How does the product manage engagement with both the location and the product itself?	
How does the product activity add value and engage the visitor?	

Part 6	Process 2.3 Disengagement
How does your product manage disengagement?	
Does your product provide a natural flow, beginning, middle and end to the visit experience?	

Part 7	Process 2.4 Extended Engagement
Is engagement with the location limited to the visit?	
What opportunities are there for post-visit engagement?	
Can you build an on-going developing relationship with the audience	
What would be the most appropriate method and media for this?	
Do you want visitors to continue participating and contributing to experience post visit?	

Figure 5-24 Creator Questions (Wilkinson, 2018)

5.1.3.2 Design Requirements Checklist

The Design Requirements Checklist is the second template document in the guide and is completed during the first two stages of the design process.

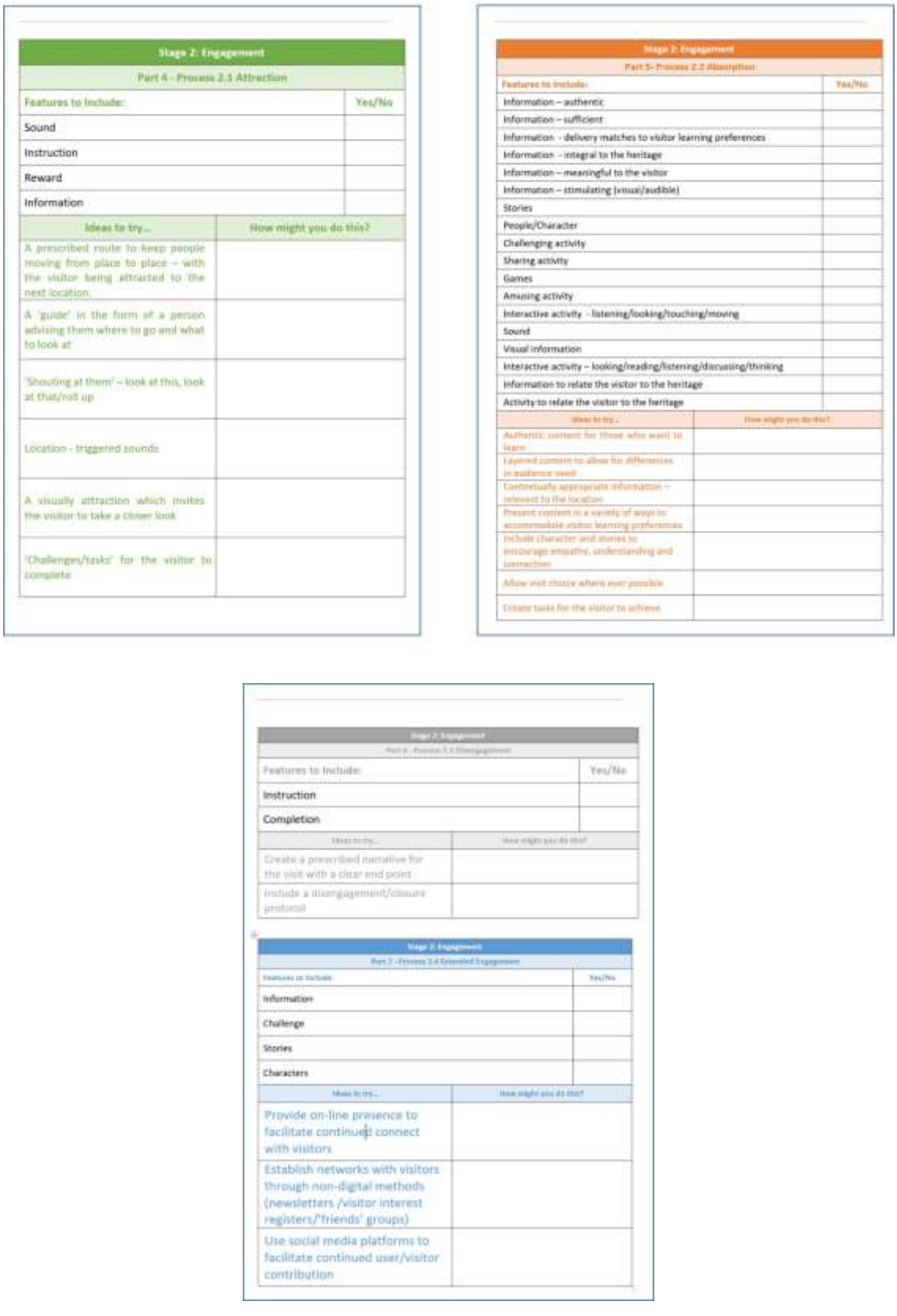
Design Requirements Checklist

Interpretive Digital Media

Stage 1: Context	
Part 1 - Process 1.1 Purpose	
The product will be required to:	Tick if required
Connect the visitor to the location	
Provide information about the location	
Create a relationship between the visitor and the location	
Promote the heritage to new audiences	
Provide a 'rich' interpretation of the heritage	
Change attitude of the visitor towards the location	
Make the visitor do something	
Help the visitor know something	
Help the visitor understand something	
Provide an experience at the location	
Bring history to life'	
Reveal 'invisible' heritage	
Other:	

Stage 1: Context	
Part 2 - Process 1.2 Location	
Reveal invisible heritage	
Operate outdoors	
Operate in bright sunshine	
Operate in rain	
Operate whilst visitor is moving (running/walking)	
Consider visitor physical endurance	
Encourage visitor to look at location	
Encourage visitor to listen to the location	
Operate in noisy conditions	
Support visitor safety and security	
Facilitate visitor interaction with location	
Engage the visitor with the location	
Connect the visitor with the location	
Maintain connection with the location	
Operate with the limited availability of Wi-Fi	
Other:	

Stage 1: Context	
Part 3 - Process 1.3 Audience	
Be used by children	
Be used by adults	
Support visitor motivation - to learn	
Support visitor motivation - to have fun	
Support visitor motivation - to understand	
Support visitor motivation - to share experience	
Support visitor motivation - to interact with others	
Support visitor motivation - to contribute to the experience	
Support visitors who are new to location	
Support visitors who already in relationship with the location	
Support visitors who regularly use the location	
Support the length of visitor stay	
Support visitor learner preferences	
Support communication preferences - visual	
Support communication preferences - audio	
Support communication preferences - reading	
Attract new audience	
Support the interest of the visitor	
Other:	



Stage 2: Engagement	
Part 4 - Process 2.1 Attraction	
Features to Include:	Yes/No
Sound	
Instruction	
Reward	
Information	
Ideas to try...	How might you do this?
A prescribed route to keep people moving from place to place – with the visitor being attracted to the next location.	
A 'guide' in the form of a person advising them where to go and what to look at	
'Shouting at them' – look at this, look at that/roll up	
Location - triggered sounds	
A visually attraction which invites the visitor to take a closer look	
'Challenges/tasks' for the visitor to complete	

Stage 2: Engagement	
Part 5– Process 2.2 Absorption	
Features to Include:	Yes/No
Information – authentic	
Information – sufficient	
Information - delivery matches to visitor learning preferences	
Information - integral to the heritage	
Information – meaningful to the visitor	
Information – stimulating (visual/audible)	
Stories	
People/Character	
Challenging activity	
Sharing activity	
Games	
Amusing activity	
Interactive activity - listening/looking/touching/moving	
Sound	
Visual information	
Interactive activity – looking/reading/listening/discussing/thinking	
Information to relate the visitor to the heritage	
Activity to relate the visitor to the heritage	
Ideas to try...	How might you do this?
Authentic content for those who want to learn	
Layered content to allow for differences in audience need	
Contextually appropriate information – relevant to the location	
Present content in a variety of ways to accommodate visitor learning preferences	
Include character and stories to encourage empathy, understanding and connection	
Allow visit choice where ever possible	
Create tasks for the visitor to achieve	

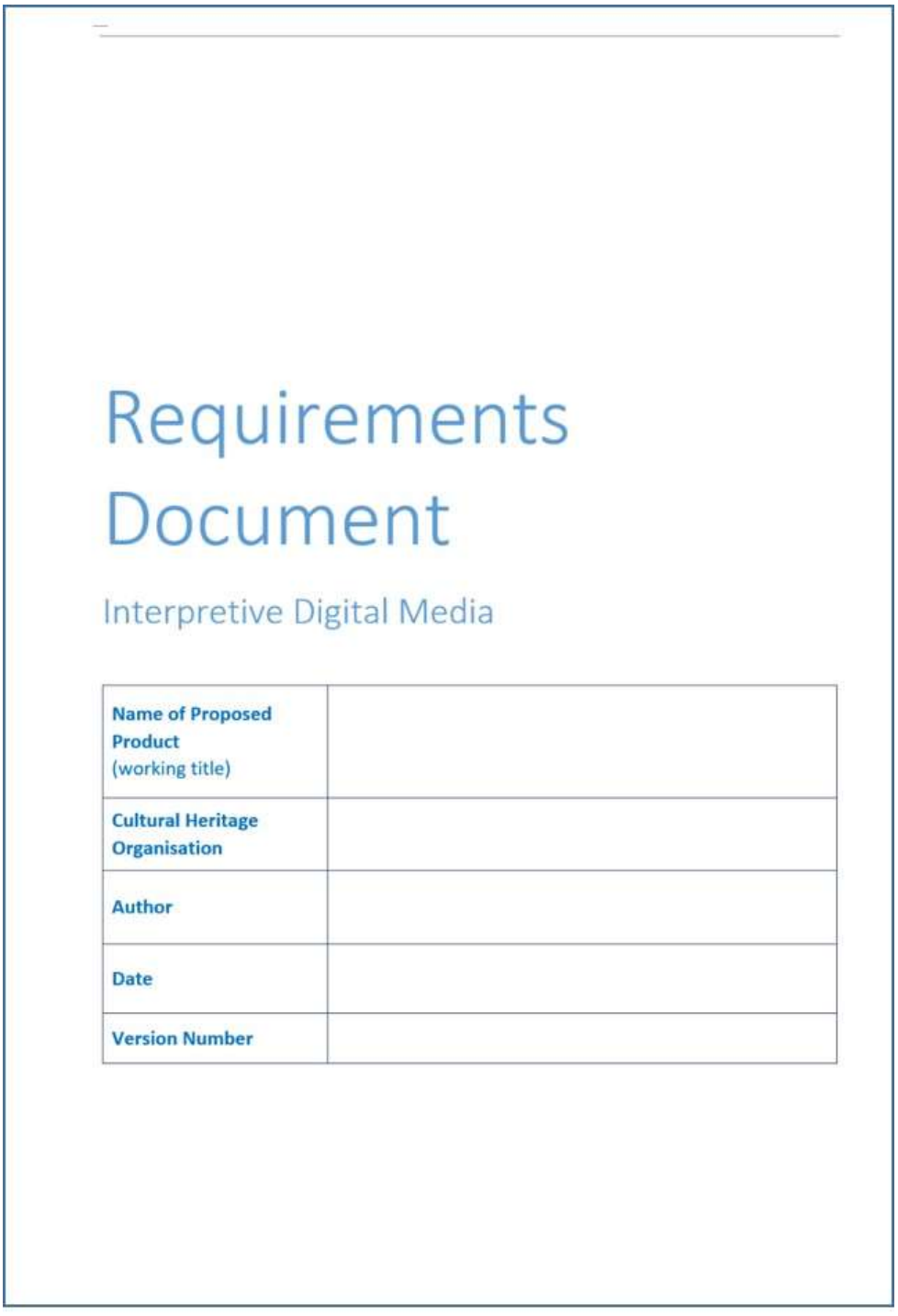
Stage 2: Engagement	
Part 6 - Process 2.3 Disengagement	
Features to Include:	Yes/No
Instruction	
Completion	
Ideas to try...	How might you do this?
Create a prescribed narrative for the visit with a clear end point	
Include a disengagement/closure protocol	

Stage 2: Engagement	
Part 7 - Process 2.4 Extended Engagement	
Features to Include:	Yes/No
Information	
Challenge	
Stories	
Characters	
Ideas to try...	How might you do this?
Provide on-line presence to facilitate continued connect with visitors	
Establish networks with visitors through non-digital methods (newsletters /visitor interest registers/'friends' groups)	
Use social media platforms to facilitate continued user/visitor contribution	

Figure 5-25 Design Requirements Checklist (Wilkinson, 2018)

5.1.3.3 Requirements Document

The Requirements Document is the third template in the guide and is completed during the first two stages of the design project.



Requirements Document

Interpretive Digital Media

Name of Proposed Product (working title)	
Cultural Heritage Organisation	
Author	
Date	
Version Number	

Notes on completion:
Use this document to record the design requirements for your interpretive digital media product. The pre-design phase of the DFIDM includes seven processes, each of which concludes with the creator completing the relevant part of this document.

Part 1: Stage 1 Context/Process 1:1 Purpose

Potential Requirement *Suggested Features*	**Product Requirements**	**Proposed Design Feature**
Connect the visitor to the location *Information meaningful to the visitor* *Information relevant to the location*		
Provide information about the location *Information relevant to the location*		
Create a relationship between the visitor and the location *Information meaningful to the visitor* *Information meaningful to the location*		
Promote the heritage to new audiences *Information about the location* *Presentation methods attractive to new target audience* *Information attractive to new target audiences*		
Provide a 'rich' interpretation of the heritage *Mixed presentation methods* *Multi-media presentation methods* *Audio/Images/Video/Animation* *Narrated stories/Written stories* *User generated content* *Games/User interaction/Layered information*		
Change attitude of the visitor towards the location *Information relevant to the location* *Evocative content - stories* *Evocative content - people/characters*		
To help the visitor do something *Instructions*		
To help the visitor know something *Information relevant to the location*		
To help the visitor understand something *Information meaningful to the visitor*		
To help the visitor feel something *Information meaningful to the visitor* *Evocative content - stories* *Evocative content - people/characters*		
To provide an experience at the location *Location-aware - trigger content* *Location-aware - track visitor* *Location-aware - guide visitor* *Augmented reality*		
Bring history to life' *Evocative content - stories* *Evocative content - people/characters* *Augmented reality* *Immersive content - stories* *Immersive content - sounds*		
Reveal 'invisible' heritage *Images* *Augmented reality*		

Part 2: Stage 1 Context/Process 1.2 Place

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature
Reveal invisible heritage *Images* *Augmented reality*		
Operate outdoors *Robust hardware platform*		
Operational in bright sunshine *Adjustable screen display* *Locate focus points in shade*		
Operational in rain *Robust hardware platform* *Work in pocket*		
Operational whilst visitor is moving (running/walking) *Work in pocket*		
Consider visitor physical endurance *Locate focus points near seating* *Appropriate length of physical navigation route* *Appropriate length of stay at a focus point* *Appropriate length of visit (duration)*		
Encourage visitor to look at location *Instruction* *Locate focus points near something visible/contextual in the location*		
Encourage visitor to listen to the location *Instruction*		
Operational in noisy conditions *Headphones*		
Support visitor safety and security *Safety instruction* *Locate focus points in safe locations*		
Facilitate visitor interaction with location *User-generated content* *Social media functionality* *Location-aware - trigger content* *Location-aware - track visitor* *Location-aware - guide visitor* *Tasks to do on location*		
Engage the visitor with the location *Locate focus points in appropriate contextual locations*		
Connect the visitor with the location *Contextual information - a map* *Contextual information - a navigational route*		
Maintain connection with the location *Authentic proximity and integrity of content* *Appropriate level of immersion*		
Availability of Wi-Fi *Pre downloaded content*		
Limited availability of Wi-Fi *Minimise data usage* *Reduce asset sizes to minimum*		

Part 3: Stage 1 Context/Process 1.3 Audience

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature
Used by children *Age specific content* *Age specific delivery*		
Used by adults *Age specific content* *Age specific delivery*		
Visitor motivation - to learn *Information*		
Visitor motivation - to have fun *Games* *Entertaining content*		
Visitor motivation - to understand *Information meaningful to the visitor* *Evocative content - stories* *Evocative content - characters/people*		
Visitor motivation - to share experience *Social media functionality* *User-generated content*		
Visitor motivation - to interact with others *Social media functionality* *User-generated content*		
Visitor motivation - to contribute to the experience *User-generated content*		
Visitor new to location *Information*		
Visitor already in relationship with the location *Layered information*		
Visitor a regular user of the location *Frequent additions to content*		
Support the length of visitor stay *Appropriate length of visit experience*		
Support visitor learner preferences *Multi-media presentation* *Mixed-media presentation*		
Support communication preferences - visual *Images and photographs* *Animations* *Video*		
Support communication preferences - audio *Sound effects* *Narration*		
Support communication preferences - reading *Written word*		
Attract new audience *Presentation methods attractive to new target audience* *Information attractive to new target audiences*		
Support the interest of the visitor *Information attractive to the visitor*		

Part 4: Stage 2 Engagement/Process 2.1 Attraction

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature
Curious *Sound* *Instruction*		
Attracted *Sound* *Instruction* *Reward*		
Interested *Information - taster*		

Part 5: Stage 2 Engagement/Process 2.2 Absorption

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design
Learning *Information – authentic* *Information – sufficient* *Information – delivery matches to visitor learning preferences*		
Understanding *Information – integral to the heritage* *Information – meaningful to the visitor* *Information – immersive and evocative content*		
Empathising *Stories* *People/Characters*		
Enjoying *Challenging activity* *Sharing activity*		
Having Fun *Challenge activity* *Sharing activity* *Games* *Amusing activity*		
Involved *Interactive activity – listening/looking/touching/ moving*		
Immersed *Sound* *Stories* *Visual information*		
Interacting *Looking/Reading/Listening/Discussing/Thinking*		
Connected *Information to relate the visitor and heritage* *Activities to relate the visitor to the heritage*		

Part 6 Stage 2 Engagement/Process 2.3 Disengagement

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature
Leaving *Instruction/Completion*		
Satisfied *Completion*		

Part 7 Stage 2 Engagement/Process 2.4 Extended Engagement

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature
Curious *Information/Challenge*		
Inspired *Information/Stories/Character /Challenge*		
Interested *Information/Stories*		

Figure 5-26 Requirements Checklist (Wilkinson, 2018)

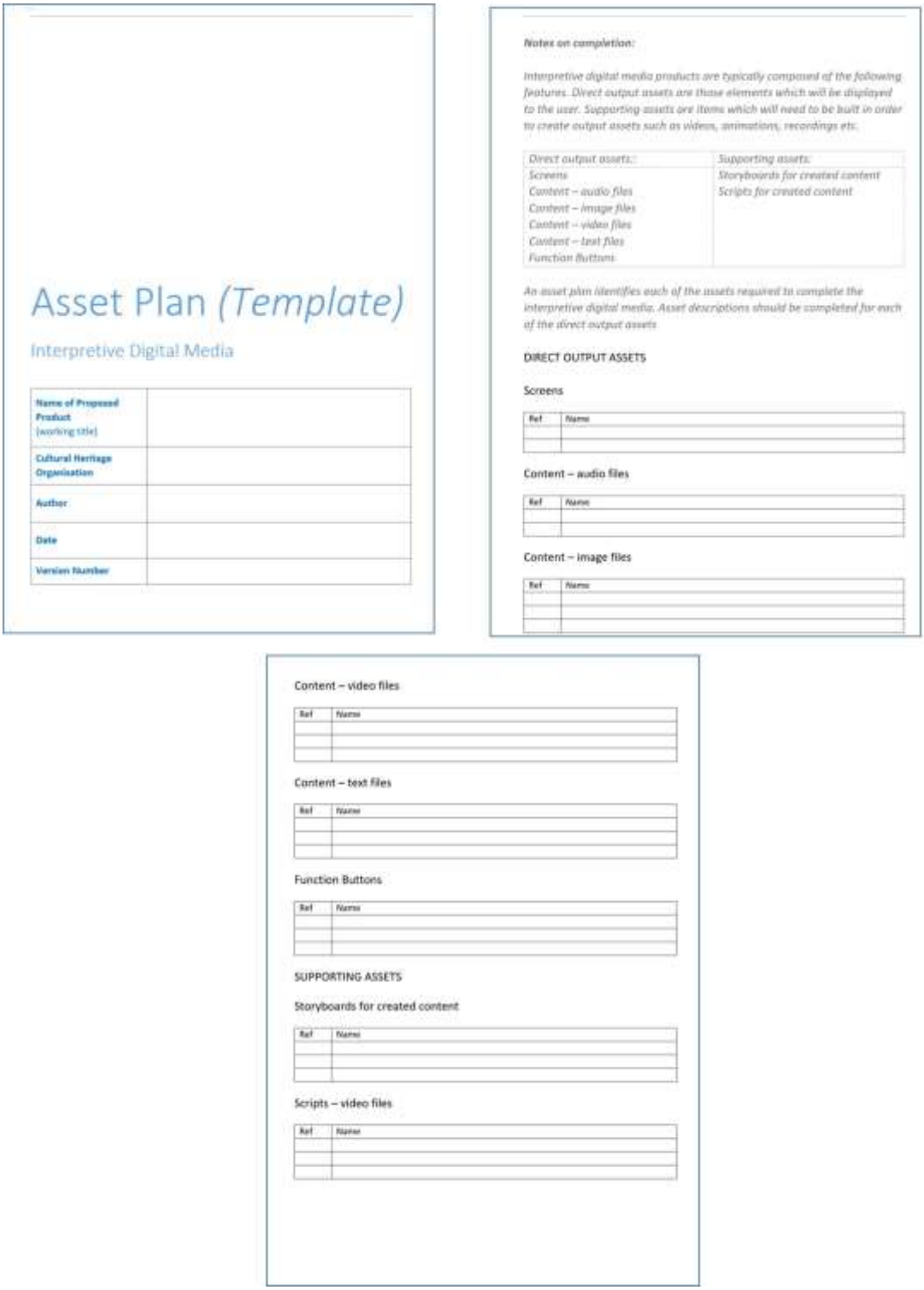
5.1.3.4 Product Specification Document

The guide contains a template for the Product Specification Document with advice as to how this should be completed.

Figure 5-27 Product Specification Document (Wilkinson, 2018)

5.1.3.5 Asset Plan

Template documentation is provided for the Asset Plan which is completed as part of the design process



Asset Plan *(Template)*

Interpretive Digital Media

Name of Proposed Product (working title)	
Cultural Heritage Organisation	
Author	
Date	
Version Number	

Notes on completion:

Interpretive digital media products are typically composed of the following features. Direct output assets are those elements which will be displayed to the user. Supporting assets are items which will need to be built in order to create output assets such as videos, animations, recordings etc.

Direct output assets:	*Supporting assets:*
Screens	*Storyboards for created content*
Content – audio files	*Scripts for created content*
Content – image files	
Content – video files	
Content – text files	
Function Buttons	

An asset plan identifies each of the assets required to complete the interpretive digital media. Asset descriptions should be completed for each of the direct output assets

DIRECT OUTPUT ASSETS

Screens

Ref	Name

Content – audio files

Ref	Name

Content – image files

Ref	Name

Content – video files

Ref	Name

Content – text files

Ref	Name

Function Buttons

Ref	Name

SUPPORTING ASSETS

Storyboards for created content

Ref	Name

Scripts – video files

Ref	Name

Figure 5-28 Summary guidance for asset plan (Wilkinson, 2018)

5.1.3.6 Asset Specifications

The guidance provides template documentation for the designer to create specifications for each asset in their digital product.

Asset Specifications

Interpretive Digital Media (IDM)

Name of Proposed Product (working title)	
Cultural Heritage Organisation	
Author	
Date	
Version Number	

Asset Packs (Available Separately)

Screen Assets

Name			
File Name		*Asset Type*	*File Type*
		Screen	
Description		*Thumbnail*	
Functions			
Ref	*Name*	*Action*	
Supporting Assets (further details in this document)			
Ref	*Name*	*Type*	*File-name*

Audio Assets

Name		
File Name	Asset Type	File Type
	Audio	Wav file
Description		
Operation		

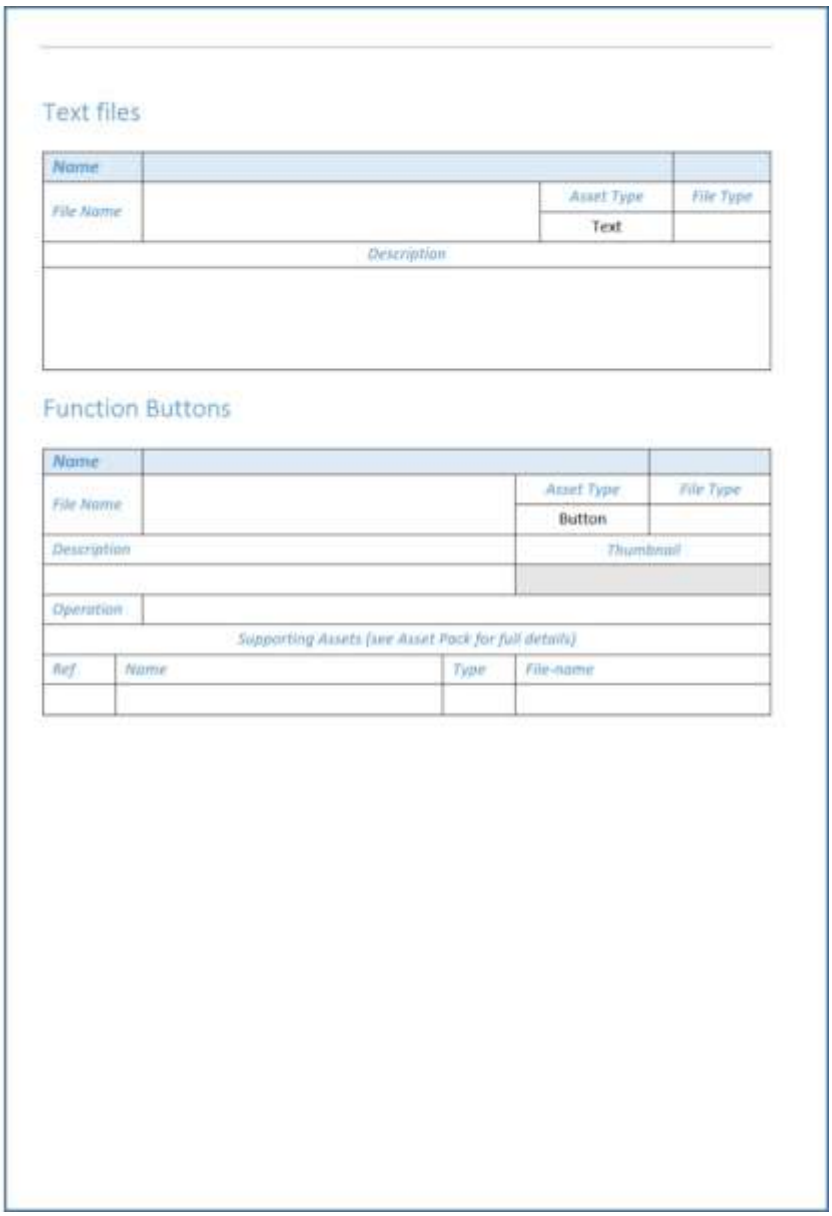
Name		
File Name	Asset Type	File Type
	Audio	
Description	.	
Operation		
Supporting Assets (see Asset Pack for full details)		
Ref	Name	Type	File-name

Image Files

Name		
File Name	Asset Type	File Type
	Image	
Description	Thumbnail	

Video Assets

Name		
File Name	Asset Type	File Type
	Video	AVI File
Description		
Operation		
Supporting Assets (see Asset Pack for full details)		
Ref	Name	Type	File-name



Text files

Name		
File Name	Asset Type	File Type
	Text	
Description		

Function Buttons

Name		
File Name	Asset Type	File Type
	Button	
Description	Thumbnail	
Operation		
Supporting Assets (see Asset Pack for full details)		
Ref	Name	Type	File-name

Figure 5-29 Asset Specifications (Wilkinson, 2018)

5.2 Summary

Chapter five has described the development the guidance and the rationale for the engagement framework with an overview of how both can be used by cultural heritage practitioners and digital designers in the creation of interpretive products. Chapter six will describe how the guidance and framework were used by the researcher to create the prototype product for Victoria Park in order to test the effectiveness of the Guide and engagement framework.

6 Chapter Six: Design of the Prototype Victoria Park App

6.1 Introduction

This chapter addresses research objective 5 of this study, as outlined in section 1.3.2, page 1-12. It describes how the researcher used the guidance to produce the prototype Victoria Park app and the associated additional digital content. To design and create the Victoria Park app the researcher followed the recommendations outlined in the Guide. Completed documentation for the Victoria Park app can be found in Appendix 6A. In the absence of a client for this prototype product the researcher assumed the view point of a cultural heritage practitioner. A full description of the researcher's completion of this guidance follows.

6.2 Stage 1 Context

6.2.1 Process 1.1 A1 gather information for purpose

To define the purpose of the prototype the researcher completed part 1 of the *Creator Questions*. Answers are provided in table 6-1 page 6-232.

6.2.2 Process 1.1 A2 generate ideas for purpose

Further ideas were generated regarding the purpose of the prototype product using mind-mapping techniques, figure 6-1, p 6-233. Key themes emerging from this activity were: the importance of representing a sense of place; supporting visitor to learning about the location; identifying and selecting which of the park's features and history might most interest the visitor and gain their attention; providing a fun and amusing experience and creating an experience of visiting the park which would be emotive and enable the visitor to develop an emotional attachment to the location.

6.2.3 Process 1.1 A3 analyse ideas

Using the information provided in the previous two activities requirements for the product were clarified in part 1 of the *Design Requirements Checklist* (table 6-2 page 6-233).

Stage 1: Context

Part 1	Process 1.1 Gather information for purpose
What do you want to achieve?	To create a connection between the visitor and Victoria Park
What do you really want to achieve?	An enriched relationship with Victoria Park, which might enhance the visitor's respect for the location and a sense of pride in the area
What is the story you want to tell?	The 'story' needs to be sufficient to interest and engage the visitor and have a narrative that is directly related to Victoria Park. Authentic context which is directly connected to the location is identified as an important factor for engagement in the preliminary studies for this project. Although the Park appears to have very little to offer in terms of history and culture there are a number of 'stories' to tell including: war time usage; the memorials and Peace Walk; the University of Leicester; community usage over time; big events that have been on the park; Leicester horse races in the 19th century; carnivals and national shows; sporting events and many other topics. The decision of which 'story' to focus on will need further input from the investigation into visitor interests and the 'place' itself.
What does engagement look like in the context of your location?	Increasing a sense of pride in the park and developing a greater appreciation of its worth to the community and its contribution to history.
What do you want the audience to do/know/feel as a result of using this product?	An understanding of Victoria Park as an important community venue An empathy with the location and the people who have been there
How are the following experiences important in the context of your visitor experience: learning, understanding, enjoying, feeling, appreciating something?	The VEHMAS project found that visitors are motivated to learn and consequently it is important that people are able to discover something new or develop their existing knowledge of Victoria Park. An enjoyable experience will also contribute to helping the visitor connect with the park in a positive way.
Why mobile? Could you do this as effectively with paper?	A paper leaflet or a blue badge guide can provide visitors with an interesting and informative experience of the park, however, a mobile phone app should be able to provide an enriched and flexible experience, available to the visitor at any time, convenient and expansive in terms of delivery and content.
What don't you want?	A limited experience that can be done as effectively with a leaflet. An irritating experience with troublesome technology. A product which no one uses.

Table 6-1 Victoria Park Creator Questions part 1 (Wilkinson, 2018)

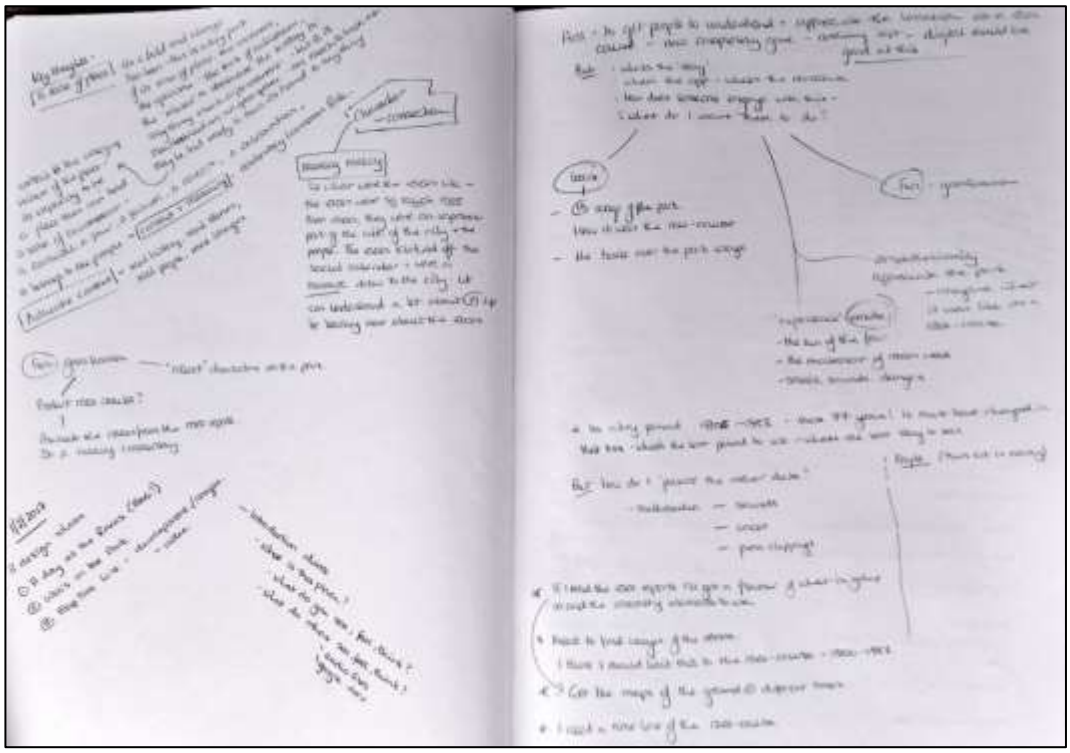


Figure 6-1 Victoria Park mind-map (Wilkinson, 2018)

Stage 1: Context	
Part 1 - Process 1.1 Purpose	
The product will be required to:	**Tick if required**
Connect the visitor to the location	✓
Provide information about the location	N/A
Create a relationship between the visitor and the location	✓
Promote the heritage to new audiences	N/A
Provide a 'rich' interpretation of the heritage	✓
Change attitude of the visitor towards the location	✓
Make the visitor do something	✓
Help the visitor know something	✓
Help the visitor understand something	✓
Help the visitor feel something	✓
Provide an experience at the location	✓
Bring history to life'	✓
Reveal 'invisible' heritage	✓
Other:	N/A

Table 6-2 Victoria Park Design Requirements Checklist part 1 (Wilkinson, 2018)

6.2.4 Process 1.1 A4 produce Requirements Document

Part 1 of the *Requirements Document* was completed mapping the identified product requirements with suggested features to propose appropriate design features for the prototype (table 6-3 page 6-235).

Part 1: Stage 1 Context/Process 1:1 Purpose

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature for the Uncover-Discover Victoria Park prototype app
Connect the visitor to the location *Information meaningful to the visitor* *Information relevant to the location*	Enable the visitor to connect with the cultural heritage of Victoria Park in a meaningful way	Information directly related to the park Stories containing a point of reference – similarity to the visitor's experiences of the Park – so a focus on the fairs and entertainments. Focus on the 19th century annual Leicester races as a central theme.
Provide information about the location *Information relevant to the location*	*Not a key requirement*	*Not addressed*
Create a relationship between the visitor and the location *Information meaningful to the visitor* *Information meaningful to the location*	Enable the visitor to appreciate the importance of Victoria Park to the people of Leicester	Narrated stories told in first person by characters who were at the races – with references to Leicester and the people of Leicester
Promote the heritage to new audiences *Information about the location* *Presentation methods attractive to new target audience* *Information attractive to new target audiences*	*Not a key requirement*	*Not addressed*
Provide a 'rich' interpretation of the heritage *Mixed presentation methods* *Multi-media presentation methods* *Audio* *Images* *Video* *Animation* *Narrated stories* *Written stories* *User generated content* *Games* *User interaction* *Layered information*	Provide a richer experience than alternative methods of interpretation (leaflets or personal guide)	Narrated stories told in the first person by characters who are at the races – designed to make the visitor feel that they are with that person at the races. Animated versions of each Point of Interest with images to help the visitor imagine what the experience would have been like. Presentation of the original article from the Leicester Chronicle Layered information available outside of the app in the form of additional digital content.
Change attitude of the visitor towards the location *Information relevant to the location* *Evocative content - stories* *Evocative content - people/characters*	Enable the visitor to develop and/or deepen a personal appreciation of Victoria Park	Points of Interest described with characters and stories relating to the races, the people of Leicester, linking to other things that have happened on the Park Layered information with additional information for visitors to explore relating to Victoria Park –historical and contemporary information available.
To help the visitor do something *Instructions*	The visitor experience should be provide a loose structure to enable the visitor to experience the park in a cohesive and meaningful way	Provide a suggested route to follow – the route of the racecourse. Locate Points of Interest on the racecourse line and provide 'instruction' as to how to get to each one.
To help the visitor know something *Information relevant to the location*	The visitor should know more about the 19th century races and associated events	Provide authentic an accurate historical material on the races – sourced initially from the Leicester Chronicle

(Continues on next page)

(Continued from previous page)

To help the visitor understand something *Information meaningful to the visitor*	Enable the visitor to understand more about the history of Victoria Park	Information from the Leicester Chronicle which is historically accurate and directly related to Victoria Park, plus supporting information to provide more context regarding the Park and its surroundings, 19th century horse racing and other events described in the stories (crime, funfairs, archery etc)
To help the visitor feel something *Information meaningful to the visitor* *Evocative content - stories* *Evocative content - people/characters*	Enable the visitor to have an emotive experience of the races	Create stories about the people and events which happened at the races – focus on the entertainments, the fair and the people who attended the races
To provide an experience at the location *Location-aware functions - trigger content* *Location-aware functions - track visitor* *Location-aware functions - guide visitor* *Augmented reality*	Exploit the unique potential of mobile, location-based technology by facilitating an experience which cannot be achieved through other methods of interpretive media	Create and locate Points of Interest around the route of the 19th century racetrack Use location-based technology to trigger attraction sounds Layered information using a range of media to provide additional content relevant to the Point of Interest and location
Bring history to life' *Evocative content - stories* *Evocative content - people/characters* *Augmented reality* *Immersive content - stories* *Immersive content - sounds*	To develop an understanding of what it was like to go to the Leicester races in the 19th Century	Create stories about the people and events which happened at the races – focus on the entertainments, the fair and the people who attended the races
Reveal 'invisible' heritage *Images* *Augmented reality*	To enable the visitor to see Victoria Park as it used to be and to imagine it when it was a racecourse, what it would have looked like, where the racecourse was	Maps of the park with the racecourse Images of the park, the Grandstand, 19th century racing, 19th century fairs and entertainments, music and sounds from the racecourse period

Table 6-3 Victoria Park Requirements Document part 1 (Wilkinson, 2018)

6.2.5 Process 1.2 A1 gather information for place

To clarify the nature of the place for the prototype the researcher undertook a range of investigative activities including site visits and historical research. The resulting information was used to completed part 2 of the Creator Questions. Answers are provided in table 6-4, page 6-249.

6.2.5.1 Victoria Park background information

A descriptive overview of Victoria Park, Leicester provides context for the 'place' featured in this study. Situated approximately one mile south of Leicester city centre Victoria Park is an area of 69 acres of open parkland laid out with pathways and avenues of trees Originally part of the common land, or town fields of Leicester (Boynton, 2000) the park retains an impression of being an open and large field. Located on the top of a

hill with views over Leicester the park feels distant to the main city centre. It is sparse, open and very exposed to the weather, figure 6-2, page 6-237 shows the results of storm damage to a mature tree blown down in 2017. A recent renovation project has improved the car park areas, creating a new tree lined avenue to the war memorial, repairing the historic park gates and enhancing the sporting amenities. (Leicester City Council, 2016).

The Park contains two war memorials: the Memorial Arch, designed by Sir Edwin Lutyens which serves as Leicester's main war memorial and a small Rock Memorial commemorating the American 82nd Airborne Division.

Three buildings exist within the Park: two lodges and the Pavilion. Built in the 1940s and also designed by Sir Edwin Lutyen the lodges flank the gates at the North Entrance to London Road. The Lodges now house the Park Service and the Leicester Counselling Service.

Opened in 1958 the current Pavilion was built to replace the original racecourse grandstand which was destroyed after suffering severe bomb damage during the World War Two bombing raids on Leicester. The modern Pavilion provides storage space and changing facilities for sporting activities on the park, such as the rugby and football and is also currently home to an Indian Restaurant. There is also a small, part-time police station which can be seen on the right hand side of the building.

The Park has two children's play areas, a small pond) and nature area and an outdoor gym. Other sports facilities include a bowling green, a croquet court, four tennis courts, a basketball court, a skate park and floodlit five aside football pitches.

The park is flanked by a range of different buildings. Residential properties along the south and east boundaries of Victoria Park and London Road whilst the north and west boundaries are dominated by De Montfort Hall and the University of Leicester.

Map (Crown Copyright, 2016)

Memorial Rock (Wilkinson, 2018)

Field like aspect (Wilkinson, 2018)

Memorial Arch (Wilkinson 2016)

Storm damage (Wilkinson, 2018)

Lutyen's Lodge (Wilkinson, 2018)

North paths (Wilkinson, 2018)

Victoria Park Pavilion (Wilkinson, 2018)

Children's playgrounds (Wilkinson, 2018)

Bowls and Croquet (Wilkinson, 2018)

The pond (Wilkinson, 2018)

University of Leicester (Wilkinson, 2018)

Outdoor gym (Wilkinson, 2018)

South boundary (Wilkinson, 2018)

Children's play area (Wilkinson, 2018)

West boundary (Wilkinson, 2018)

North boundary (Wilkinson, 2018)

East boundary (Wilkinson 2018)

Figure 6-2 Images of Victoria Park

6.2.5.2 Site visits and observations

The researcher is familiar with Victoria Park and aware of the characteristic and features of the Park as described here. Additional site visits were undertaken to identify recent changes, specifically those relating to the City Council renovation project. Examples of the changes include renovations to the park gates and improvements to the car park area as shown in figures 6-3 to 6-5 pp 6-239/6-240. In 2017 new interpretation boards were installed to provide information on the racecourse, the memorial arch and the grandstand, figure 6-3 page 6-241. These were installed during the site visit stage of this study and were not in place during the Pre Design phase of this project. Enhancements to the children's play area were also noted as well as the introduction of enhanced nature boards and nature trail activities, figures 6-7 and 6-8 page 6-241

Figure 6-3 Renovations to Park Gates (Wilkinson, 2018)

Figure 6-4 Restored Memorial Gates on Peace Walk 2017 (Wilkinson, 2018)

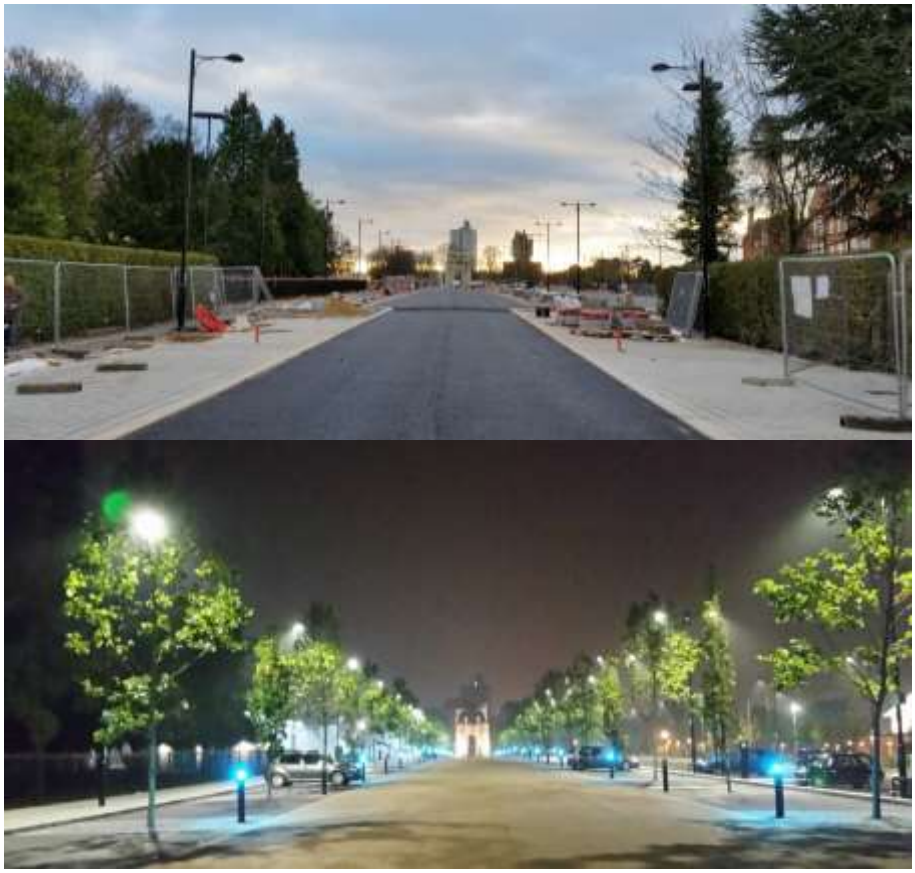


Figure 6-5 Creation of Memorial Approach 2017 (Wilkinson, 2018)

Figure 6-6 Interpretation boards (Wilkinson, 2018)

Figure 6-7 Nature trails in Victoria Park (Wilkinson, 2016)

Figure 6-8 Nature boards in Victoria Park (Wilkinson, 2016)

6.2.5.3 Historical research and contemporary context

Further research was required to fully understand the historical and contemporary context of Victoria Park. A review of web-based information and literature written about the Park was conducted to gain more knowledge and develop a deeper understanding of the location. Key resources included the following documentation: local history publications featuring Victoria Park; articles from the Leicester Mercury; academic research papers; newsletters, blogs, oral histories, historical records for the city, videos and publications from local interest groups such as the Victorian Society, Friends of Victoria Park, Stoneygate Conservation Area Society and Leicester City Council 'The Story of Our Parks' project; historical postcards and photographs; google reviews from visitors to the park, local planning documentation and meetings with the 'Story of Our Parks' project officer. The researcher also conducted a Visitor Interest Survey,. This method of gathering information regarding people's personal relationship with the park was considered preferable to interviewing random, individual Park users on location as it would achieve a bigger reach and be more comprehensive.

6.2.5.4 Results of the research into Victoria Park

Findings from the research into Victoria Park have been categorised into five key themes: historic value; contemporary usage; community usage; commemorative relevance and public investment. A summary of these finding is now provided under each of these themes.

6.2.5.4.1 Historic value of Victoria Park

From 1805 to 1883 the annual Leicester races were held on Victoria Park, indeed the site was known only as the racecourse until the mid 1860s and not even acquire the name Victoria Park until 1866. There is no tangible evidence left of the 19th century races and most people are unaware of these events or of the activities which would have been associated with the races. A painting by E B Herberte (1874) figure 6-9 p 6-243 is the only image of horse racing on the part although there are a number of academic articles and historical papers pertaining to the races and the race course, most notably 'The Great Carnival of the Year: the Leicester Races in the 19th Century' which can be found

in the Transactions of the Vaughan Archaeological Society (Crump, 1983) and the contemporary race reports contained in the Leicester Chronicle (British Library Newspapers).

Figure 6-9 Horse Racing on Victoria Park E.B. Herberte (Leicester Museum and Art Gallery)

Figure 6-10 World War II on the Park (Leicester Mercury)

The park has an interesting WWII history. Dunkirk soldiers were brought here after the evacuation in 1940, a Lewis gun was in service on the park and in 1943 the 101st Leicester Home Guard Anti-Aircraft Rocket Battery was positioned on the football field at the south end of the Park, though never fired. Nissan huts and radar mast were also in evidence and in 1940 a shot-down German Messerschmitt fighter was displayed on the park to raise funds for the war effort.

Underground shelters were positioned around the edge of the park for local residents and much of the park was turned into allotments for the duration of WWII. The Victorian Pavilion (the race course grandstand) took a direct hit from a land mine dropped during the Leicester Blitz in 1940. The Victorian Pavilion, figure 6-11 page 6-244 was the largest building to have been erected on the Park. Built as the Racecourse Pavilion in the 1860s and badly damaged in 1940 the Pavilion is perhaps even more noticeable by its absence. Most people today are oblivious to its existence and indeed when it was demolished many felt this to be a good thing as its Victorian design was considered outmoded and inconsistent with the clean lines of Sir Edwin Lutyen's Arch and Lodges. A good range of photographic evidence provides illustration of the Pavilion's existence, particularly during the first part of the 20th century when the Edwardians used the park for walks and recreation.

Figure 6-11 the Victorian pavilion (Boynton, 2000)

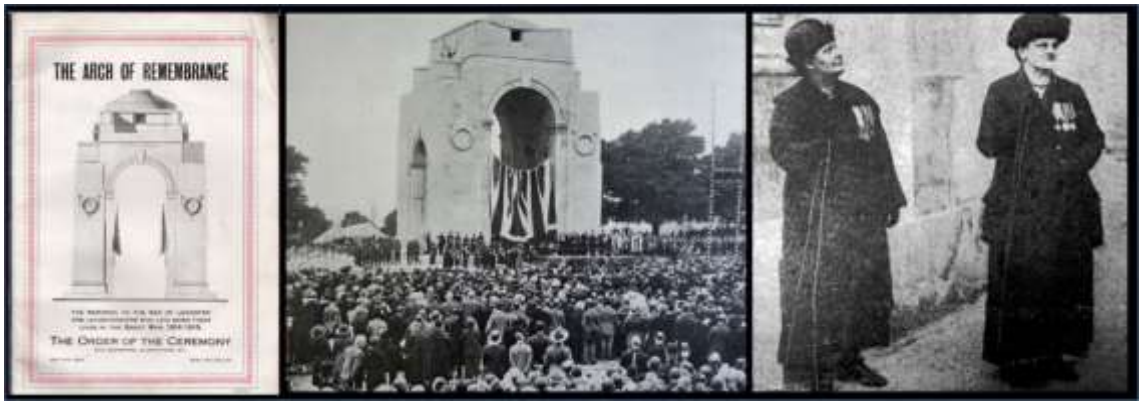


Figure 6-12 The Unveiling of the Arch of Remembrance (Story of the Parks)

The Arch of Remembrance, figure 6-12 page 2.24 and the Memorial Gates are important symbols of the importance of the park in recognising the contribution of soldiers who died in the war and the generosity of Sir Johnathan North, former mayor of Leicester who donated money for the park gates in memory of his wife Kate Eliza. The Arch of

Remembrance was unveiled in July 1925 by two local women, Elizabeth Butler and Annie Glover, whose sons died in the Great War. A crowd of 30,000 gathered for the opening ceremony.

The Park has long been the venue of many large public gatherings. One of the most notorious events was the 'great balloon riot' of 1864 during which an angry mob attacked the renowned aviator Henry Coxwell, stripping his hot air balloon to pieces because he was felt to have deceived the crowd of 50,000 by not bringing his largest and newest balloon to Leicester for demonstration. The riot was so newsworthy it was reported in the Illustrated London News and Punch magazine devised title 'Balloonatics' for the people of Leicester. In 1868 Victoria Park hosted the Royal Agricultural Society Show, an attracting more than 96,000 people and occupying the entire park for six days.

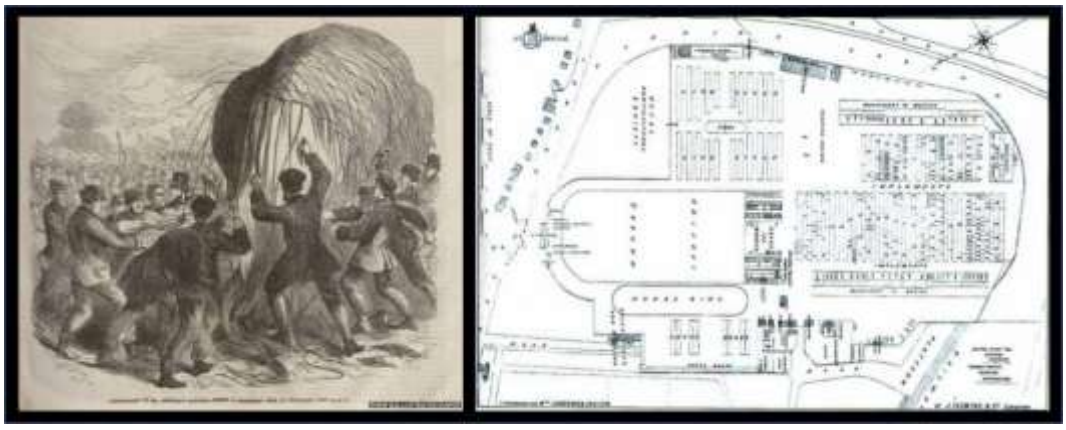


Figure 6-13 The Great Balloon Riot 1864, Royal Society Show 1868 (Penny Illustrated Paper))

The Park has been the venue for many sporting activities. Leicester County Cricket Club played regularly on the park in the 19th century and WG Grace visited here twice. In the 1880s spectators could witness football and rugby on adjacent pitches, with Leicester Fosse Football Club, the forerunner to Leicester City Football Club playing on one pitch and the Rugby Union Tigers team playing on another. In addition to this a roller skating rink was opened in 1875 on the corner of the Park by Victoria Park and London Road.

Figure 6-14 LCC Club c. 1870, Cricketers 1898 (Boyndon, 2000)

6.2.5.4.2 Contemporary Usage of Victoria Park

The park is continuously used by people on a daily basis for walking, sports and recreation. Team and group events can often be seen, ranging from weekend football to the students playing Quidditch. People appropriate the park in many ways for their own uses, see the image below as evidence of how the Pride Run was informally navigated around the park in 2017, figure 6-16 page 6-246.

Figure 6-15 Quidditch (Wilkinson, 2016)

Figure 6-16 The Pride Run (Wilkinson, 2016)

Figure 6-17 Rugby advert (Wilkinson, 2018)

Further information on the use of the park by individuals is provided by results of the Visitor Interest Survey in section 6.2.2.2.

6.2.5.4.3 Community Usage of Victoria Park

The park has a long history of hosting large outdoor public gatherings including music festivals, such as the BBC Radio One Big Sunday events and most recently a major concert by international band Kasabian. Leicester City Football Club made the Park the centre of the celebrations for winning the Premiership with thousands thronging to the park to see the team and the trophy. On a more regular basis the Park has a weekly park run and annually hosts sporting events such as the Leicester Marathon, cultural events like the Caribbean Carnival and religious events such as Eid , figure 6-18 page 6-247.

Figure 6-18 One Big Sunday 2002, Caribbean Carnival 2002, marathon 2016 (Wilkinson, 2018)

6.2.5.4.4 Victoria Park in Community Commemoration

Victoria Park is the focus for the annual Remembrance Day activities, figure 6-19 page 6-247. The pathway directly south of the Arch of Remembrance, leading to University Road, is called Peace Walk and contains a number of small memorials which continue to be being added to, a recent addition being a commemorative stone for Conscientious Objectors placed on Peace Walk in May 2016, figure 6-20 page 6-247.

Figure 6-19 Remembrance Sunday 2014 (Wilkinson, 2018)

Figure 6-20 Memorials on Peace Walk (Wilkinson, 2018)

6.2.5.4.5 Public investment into Victoria Park

Recent investment in Victoria Park has been substantial. In 2016 a £1.8m project funded by Leicester City Council, with support for the Heritage Lottery Fund, saw the creation of a new tree-lined processional route from the Arch of Remembrance to the North gates. Renovation of the Sir Jonathan North park gates at the entrance to New Walk and London Road was also undertaken, at a cost of £300,000, figure 6-21 page 6-249.

Figure 6-21 Gates renovation 2016, Raucous Races 2016 (Wilkinson, 2018)

Investment in the heritage of the Park has also supported other activities including two 'Raucous Races' Days facilitated by the Story of the Parks team and a specially commissioned play, 'The Finest Ruin' produced for the Leicester City Council 'Story of Parks' project, retelling the story of the funding and building of Arch of Remembrance, which has been performed three times, once within the Arch itself. New interpretation

boards have also been installed with information relating to the Arch of Remembrance, the race course and the pavilion.

Part 2	Process 1.2 Gather information for place
What are the defining features of this location from the point of view of the curator?	It is outdoor and there is very little evidence of any of the 'stories' events which have happened on the Park
What are the key features of this location from the visitor's point of view?	Most people will be aware of the Memorial arch and the associated events which happen on armistice day.
What is the nature of this place: cultural, social, physical?	See the Location-Identity Grid (figure) below
How do people appropriate this place for their own use – and how does your product allow them to do this?	People use the Park for running, walking, taking the dog out and playing with the children. Many commute through the Park on a regular basis to go to work etc.
How does this product enable people to engage with the location?	The product should enable people to engage with the location – without altering their usual behaviours in the park
How does your product enhance the place?	A digital product can provide images and sounds to help re tell historical events. Augmented reality could be used to illustrate items, such as the Victorian Grandstand, which are no longer visible or present.
How does your product create a meaningful relationship between visitor and place?	It will need to present something to the visitor which they can connect with. It will need to contain content which is directly related to the location – proximity is a key element as identified in the preliminary studies
How does your product allow a visitor to interact with, adapt and appropriate the place?	Not sure it does
How does your product convert a 'space' to a 'place'?	By providing information and an emotional immersive experience that could only be attributed to the Park.

Table 6-4 Victoria Park Creator Questions part 2 (Wilkinson, 2018)

6.2.6 Process 1.2 A2 analyse ideas for place

Using the results and findings from the research the researcher completed the Location-Identify Grid (table 6-5 page 6-250) to categorise the significant features which contribute to the identity of Victoria Park as a place. Using the information provided by the previous activities the requirements for the prototype product were clarified in part 2 of the *Requirements Checklist* (table 6-6 page 6-250).

Physical		Cultural (Heritage)
Boundaries Entrances Paths Map Grass Trees/Avenues Nature trails Car parks	Outdoor gyms Children's play areas Pond Benches Police station Café Changing rooms	Memorial Arch (Sir Edwin Lutyens) Hosts religious events and festivals including Eid Peace Walk Named after Queen Victoria Memorials to soldiers Home to the 19th racecourse (now gone) 19th Race Grandstand (bombed in war – now gone) Hosts cultural festivals including Caribbean Carnival Location for large events including 1868 Royal Agricultural Show, Leicester Regiment parades, Kasabian Concerts The Sir Jonathan North Memorial Gates
Social		**Personal**
Host to major events like the Leicester City Football Premier League Celebrations Start and end of the Leicester marathon Regular fun run/park run University sports groups – Quidditch etc Other local sports groups Family space – picnics/games Concert venue – One Big Sundays/Kasabian Pride Festival Leicester University Graduation Ceremonies Outdoor gym Children's play area		Journey to work Memories – childhood/student days? Walking the dog Individual personal exercise Family space Lunchtime walks Solace and peace A place of work

Table 6-5 Victoria Park Location Identity Grid (Wilkinson, 2018)

Part 2 - Process 1.2 Location	
Reveal invisible heritage	✓
Operate outdoors	✓
Operate in bright sunshine	✓
Operate in rain	✓
Operate whilst visitor is moving (running/walking)	✓
Consider visitor physical endurance	✓
Encourage visitor to look at location	✓
Encourage visitor to listen to the location	N/A
Operate in noisy conditions	✓
Support visitor safety and security	✓
Facilitate visitor interaction with location	N/A
Engage the visitor with the location	✓
Connect the visitor with the location	✓
Maintain connection with the location	✓
Operate with the limited availability of Wi-Fi	✓
Other:	N/A

Table 6-6 Victoria Park Requirements Checklist part 2 (Wilkinson, 2018)

6.2.7 Process 1.2 A3 produce Requirements Document

Part 2 of the *Requirements Document* was completed mapping the identified product requirements with suggested features to propose appropriate design features for the prototype (table 6-7 page 6-252).

Part 2: Stage 1 Context/Process 1.2 Place

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature for the Uncover-Discover Victoria Park prototype app
Reveal invisible heritage *Images* *Augmented reality*	Provide ways in which the visitor can interpret the 'invisible' heritage of the park	Images of Victoria Park with reference points to what can be seen Link to stories to specific locations in the Park through relevant siting of the Points of Interest so that they represent real locations on the 19th century race track
Operate outdoors *Robust hardware platform* **Operational in bright sunshine** *Adjustable screen display* *Locate focus points in shade*	Be capable of operating successfully outside	Apple i-pad minis with covers
	Victoria Park is an open site but with trees lined walkways which can provide shade. Visual content such as pictures and videos will need protection from sun glare	Apple i-pad minis with covers Locate Points of Interest under the tree canopy to provide shade
Operational in rain *Robust hardware platform* *Work in pocket*	Victoria Park is an open site with few buildings and little shelter from rain (except the tree canopy)	Apple i-pad minis with covers
Operational whilst visitor is moving (running/walking) *Work in pocket*	Visitors may be walking or running whilst accessing the content (the lone commuter) and so some of the content to be delivered as audio only to allow visitor to listen and look	Narrated stories
Consider visitor physical endurance *Locate focus points near seating* *Appropriate length of physical navigation route (distance)* *Appropriate length of stay at a focus point (duration)* *Appropriate length of visit (duration)*	The route of the racecourse is a 15 minute walk, just under a mile. Seats are available at regular distances. Some visitors might prefer to rest or sit whilst they look at the surroundings	Position the Points of Interest near park benches for people to sit and rest and/or sit and look, take in their surroundings
Encourage visitor to look at location *Instruction* *Locate focus points near something visible/contextual in the location*	Encourage people to stop and look around them at the park	Narrated content (non-visual) Sound content Points of Interest near benches to allow visitors to sit and absorb their surroundings
Encourage visitor to listen to the location *Instruction*	Not provided in this product	Not addressed
Operational in noisy conditions *Headphones*	Victoria Park is open with lots of distractions such as other park users and events	Recommend the use of headphones
Support visitor safety and security *Safety instruction* *Locate focus points in safe locations*	Victoria Park is an open space with a small level of threat to personal security. The space is shared with	Include warning instructions on safety and security

	other users and there is a danger of meeting cyclists on the pathways	
Facilitate visitor interaction with location *User-generated content* *Social media functionality* *Location-aware - trigger content* *Location-aware - track visitor* *Location-aware - guide visitor* *Tasks to do on location*	Not provided in this app – other than a simulated location aware attraction sound	Simulated location aware attraction sound for each Point of Interest
Engage the visitor with the location *Locate focus points in appropriate contextual locations*	The prototype must focus on the 'real stories', events and activities which have happened on the park. There is sufficient historical activity to support this. The prototype product should feature stories and events which the modern visitor can relate to, and which will support the visitor in their personal meaning making.	Use real historical resources such as the Leicester Chronicle, images and post cards from the time. Source stories of real things that happened on the Park Develop stories which will chime with the experiences of the visitors, for example focus on such things as the fairs and entertainments which have familiar modern equivalents.
Connect the visitor with the location *Contextual information - a map* *Contextual information - a navigational route*	Capitalise on proximity an ensure that content is authentic and appropriate for the location in question	Link to stories to specific locations in the Park through relevant siting of the Points of Interest so that they represent real locations on the 19th century race track Use existing and visible landmarks in the design as points of reference in the app
Maintain connection with the location *Authentic proximity and integrity of content* *Appropriate level of immersion*	Allow the visitor to access the interpretation experience without distracting from their main purpose of visiting the park	Use existing and visible landmarks in the design as points of reference in the app Use the route of the 19th century racecourse as the route of the themed tour by placing Points of Interest at appropriate locations within the Park, drawing attention to the old race course route. Allow people time at each Point of Interest to stop, look and listen. Use the stories to encourage the visitor to look around and imagine being at the races – whilst still being aware of their actual location.
Availability of Wi-Fi *Pre downloaded content*	There is no Wi-Fi on the park so provision should be made for downloading the content	The prototype is contained entirely on the hardware device and is not connected to the internet (for the purposes of this research)
Limited availability of Wi-Fi *Minimise data usage* *Reduce asset sizes to minimum*	See previous answer	See previous answer

Table 6-7 Victoria Park Requirements Document part 2 (Wilkinson, 2018)

6.2.8 Process 1.3 A1 gather information for audience

To define the *audience* features in the prototype the researcher completed part 2 of the *Creator Questions*. Answers are provided in table 6-8 page 6-253.

Part 3	Process 1.3 Gather information for audience
Who is likely to use this product?	There are many people who use the park on a regular basis and it would be interesting to target this product at local and regular users rather than infrequent visitors to the area or tourists.
What is their connection to this place (knowledge/interest/experience/usage)?	Most of the target audience (as described above) would have an existing relationship with the park though their individual knowledge, experience and usage might be varied>
How will you segment your audience/visitors?	Difficult to know at this stage, although a focus on adults rather than specifically children is anticipated
Who will you pitch your product at? Who is your main audience?	As per the previous answer adults rather than specifically children
What do the target audience want from their visit?	This is where user-centred design is difficult as the target audience is difficult to identify and subsequently knowing what they would like from a visit is impossible to ascertain. More investigation is required to ascertain visitor motivation and interest
Are you looking for new audiences/visitors?	No – not for this product
What are you visitors' motivations in coming to this place?	As stated earlier this is uncertain without further visitor analysis
What's going to stop your audience/visitor engaging with the place and/or your product	Being distracted by other people they are with or the activity they are doing. The weather.
In what context will the visitors use this product (alone, in family groups, with others?)	For the prototype product – probably alone

Table 6-8 Victoria Park Requirements Document part 3 (Wilkinson, 2018)

6.2.8.1 Visitor observation

Evidence from *Process 1.2 Place* indicates that the Park is used by a large number of people, in a variety of ways and for many different reasons. It was not possible to identify a single core group of visitors with similar motivations for being on the Park and for this reason it was concluded that observing visitors in the Park would not provide consistent or helpful data as there would be too much variety in the type of user and too many types of visit to review.

Victoria Park is not a tourist destination and people do not generally visit to sightsee or engage with the history of the location, other than those who might spend a few moments looking at the Memorial Arch. It is unlikely that observing visitors using the Park would provide any significant information as to how people might want to engage with the cultural heritage of the location.

One segment of visitors which was identified through the earlier processes were regular visitors who had a personal interest in the Park because they lived or worked nearby or because they frequently walked through the Park. Targeting the prototype product at this group would be beneficial as these people would be more likely to visit the park and would have more opportunity to use the prototype product. Determining the audience needs and expectations for this group could be effectively achieved by a visitor survey and for this reason it was concluded that visitor observation was not required for this study. Full details of the visitor survey are provided in the description of Task 3 which follows.

6.2.8.2 Visitor interest survey

The Visitor Interest Survey was used to gain a greater understanding of people's existing knowledge and interest in various historical aspects of the Park, their attitudes and behaviour regarding mobile usage and expectations they might have of using such a product as a guide. The survey was promoted and distributed through direct email by the researcher and through local interest groups including the Friends of Victoria Park, the Friends of Clarendon Park, Stoneygate Conservation Area Society and Leicester's 'Story of the Parks'. Survey Monkey was used to create and distribute the survey. A copy of the survey can be found in Appendix 6B. The survey ran from 22nd May to the 10th June 2017.

6.2.8.2.1 Aims and objectives

The aim of the survey was to gauge visitor relationship with, and usage of, Victoria Park. Questions covered existing knowledge and interest in various historical aspects of the Park, attitudes and behaviour regarding mobile usage and expectations they might have of an interpretive digital media product.

6.2.8.2.2 Participant selection

The place-centred design approach required an understanding of how people used the park, consequently participants were sought from those who would have an existing relationship with the park rather than one-off visitors or tourists. Participants were sought from a range of sources which could fulfil this criteria namely previous research

participants from the Cultural Quarter research project, who were local to the area, and members of the following local interest groups: the Friends of Victoria Park; the Friends of Clarendon Park; Stoneygate Conservation Area Society and Leicester's 'Story of the Parks' project. Potential participants were approached via direct email by the researcher and through social media outlets including Facebook posts and the websites of the associated local interest groups. A total of 35 participants took part in the survey.

6.2.8.2.3 Survey data collection

The survey was created in Survey Monkey and distributed on-line as this was the most efficient way of reaching a large number of disparate people with an interest in Victoria Park. The survey explored four key areas: the relationship the respondent has with the park; the relationship the respondent has with their phone; how they like to receive information and what type of experience they would regard as most engaging. To explore the first area, the relationship people had with the park, respondents were asked indicate their frequency of visiting Victoria Park, their reasons for visiting, their existing knowledge of features and historical events associated with the cultural heritage of the Park and their levels of interest in knowing more about the cultural heritage of the park. To ascertain the affordance these people have with their mobile phone respondents were asked to indicate how frequently they would use their mobile phone, on location, as a guide or to look up information. To explore the third area of content delivery respondents were asked to indicate their preferences for receiving information, ie: reading, listening, watching a video or looking at pictures and also whether they would prefer passive activities or participative activities such as posting, sharing content and commenting. Finally respondents were asked to indicate which experiences they would find most engaging with a focus on learning something new, having fun, understanding more about the past, sharing thoughts with others, increasing empathy/attachment to the location. A copy of the on-line survey is available in Appendix 3C.

6.2.8.2.4 Survey process

An overview of the standard operating procedure for the survey process is provided in figure 6-22 page 6-257.

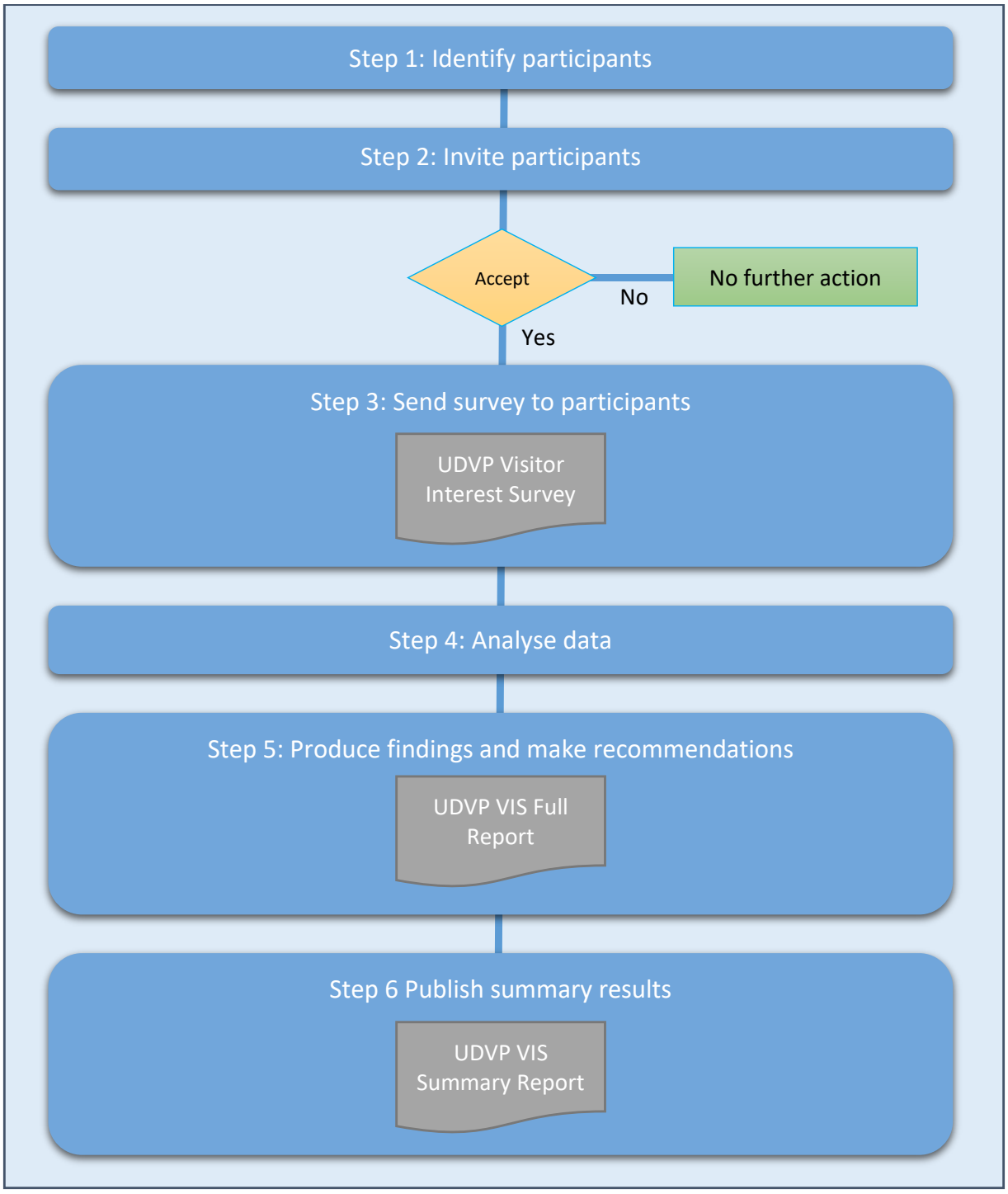


Figure 6-22 Victoria Park SOP Visitor interest survey (Wilkinson, 2018)

Step	Activity
1 Identify participants	Participants were selected from those who took part in the Mobile Apps study and people affiliated to local interests groups, namely the Friends of Victoria Park; the Friends of Clarendon Park; Stoneygate Conservation Area Society and Leicester's 'Story of the Parks' project.
2 Invite participants	Participants from the Mobile Apps project were invited by email to take part in the Victoria Park Visitor Interest Survey. A general invitation to participate was distributed via social media, Facebook groups and blogsites to those affiliated to local interest groups.
3 Send survey to participants	The on-line survey was sent directly to those participants who responded positively to the invitation
4 Analyse results	The results of the survey were collected and analysed using a Microsoft Excel spreadsheet.
5 Results	The results of the survey were reported in the Visitor Interest Survey *Report* and the recommendations were used to inform the design of the prototype product.
6 Publish summary results	A summary of the results was sent via email to all participants of the survey. Copies of the full and summary reports are available in Appendices 6B and 6C.

6.2.8.2.5 Survey results

1 How often do you visit Victoria Park?

What are your main reasons for visiting the park and how frequently you might do this?

	Daily	Weekly	Month	1 or 2	Never
Walk/commute through the park	9	7	6	12	1
Visit the Arch of Remembrance (	1	1	4	18	11
Use the outdoor gym	0	0	0	8	27
Use the sports facilities	0	0	1	3	31
Participate in an organised sporting activity	0	2	0	6	27
Run/jog	3	4	3	2	23
Walk the dog	0	0	0	2	33
Participate in the Park Run	0	2	2	2	29
Visit for fun with friends/family	0	1	9	18	7
Visit the children's play areas	0	1	5	7	22
Visit the Pavilion restaurant	0	0	0	6	29
Attend a one-off major event	0	0	0	24	11
Go to the Fair or the Circus	0	0	0	8	27
Attend annual events	0	0	0	20	15

Analysis

Everyone who answered the survey has some sort of relationship with the park. All respondents have visited the park. The most regular activities appear to be walking through the park as part of a commute to other places, running and jogging, both of which are potentially solitary activities. The most popular activities appear to be more social and less regular, such as coming to major events or being with family and friends all of which are done once or twice a year. The activities which were less recorded might not be less popular but perhaps more specialist and not represented within the group of 35 people who took part in the survey, for example, walking the dog and taking part in the weekly Park Run. The low usage of the outdoor gym and the dedicated sports facilities is interesting though again this might be more reflective of the responding group than park visitors as a whole.

Conclusions and implications for design

The results of this question are of interest as I can identify **two categories of visitor** who the App might engage. The **first category of visitor** is the **regular loan commuter** (of whom there may be many). A typical commute through the park would take between 5 and 10 minutes. Since this would be a daily activity it would seem appropriate to have a variable experience for this user, perhaps in terms of content or activity. A game such a Pokemon Go might work well with a different set of challenge each day, or perhaps a daily story for people to listen to. The later answers in this report support the use of audio rather than a game, and for those who are commuting a game might be too distracting. I am therefore considering developing a **'daily story' type activity** which could be listened to as the person crosses the park. The **second category of visitor** is the **occasional social/leisure visitor**, perhaps drawn to visit the Park by an event or by a group activity. Either way they are coming to the park for pleasure and presumably intending to stay for a period of at least half an hour. With greater time to spend in the park, and less familiar with the location than the more regular visitor an activity can be developed which would allow the visitor to invest a greater period of time at the venue and with the product. This type of user may be less familiar with the park and possibly more likely to have more time and motivation to walk around, go to different parts of the park, explore and stand to appreciate the surroundings. A multimedia approach might work well with this group providing opportunities for the visitor to move around the location. Whilst I like the idea of having two visitor types I am less sure how to measure responses to the different type of app experience that might be provided, although it would be possible to conduct a compare and contrast experience. It would also be possible to explore the presentation of the same material through different media which might help me to ascertain what benefits there might be to choosing different forms of presentation.

Table 6-9 VIS Q1 results (Wilkinson, 2018)

2 Features and historical events associated with Victoria Park

How much to you already know about the historical features and events associated with Victoria Park?

	Nothing	A little	A lot
The Arch of Remembrance (the War Memorial) 1925	3	23	9
The Sir Jonathan North/Kate Eliza North Memorial Gates (1930)	22	9	4
The Lutyen's Lodges (1931/1933)	26	6	3
The park during World War II	22	11	2
The original Victoria Park Pavilion (1866-1940)	24	8	3
Sport played on the park 19th - 20th century	29	5	1
The annual Leicester Races Week (1806-1883)	23	11	1
Henry Coxwell's Balloon Riot (1864)	30	5	0
The original fields South Fields(pre 1804)	33	1	1

Analysis

Most people reported having at least some knowledge of the Arch of Remembrance (War Memorial) which is not surprising as it is one of the most prominent features in the park both in terms of appearance and location. The war memorial is also well publicised and the focus of the city's memorial activities on Armistice Day. It is a popular and familiar local land mark. The drop in knowledge appears to correspond to the age of the feature and perhaps its visibility, so the older or less obvious something is, the less people know about.

Conclusions and Implications for design:

The focus of my research is interpreting lost and invisible heritage and so my preferred topics are those that are less obvious, such as the sport, the races and the uses of the park during the war, all of which scored low on the levels of knowledge and would therefore fit my criteria for being the key content of the prototype app.

Table 6-10 VIS Q2 results (Wilkinson, 2018)

3. Which of the following features and historical events would you be interested in discovering more about?

Which of the following features interests you most.

	Not at all	A little	A lot
The Arch of Remembrance (the War Memorial) 1925	0	14	21
The Sir Jonathan North/Kate Eliza North Memorial Gates (1930)	3	16	16
The Lutyen's Lodges (1931/1933)	4	14	17
The park during World War II	2	10	23
The original Victoria Park Pavilion (1866-1940)	4	13	18
Sport played on the park 19th - 20th century	9	15	11
The annual Leicester Races Week (1806-1883)	5	15	15
Henry Coxwell's Balloon Riot (1864)	6	14	15
The original fields South Fields(pre 1804)	7	13	15

Analysis

The levels of interest appear to correlate closely to the levels of knowledge and I wonder if this has influenced the things in which people have expressed an interest. The War Memorial is well known landmark and there is much popular interest in the war, which I think is reflected in the numbers of those who were interested in the items associated with the war. It is possible that more people would be interested in such things as the races or the Coxwell Balloon riot if they knew a little more about this. Anecdotal evidence from discussions with people would support this as people have always expressed interest when they have been told about these events. These results don't demonstrate a strong interest in knowing more about the races, however in the commentary two people expressed an interest in knowing more about the race course, which is another indicator that this could be an appropriate topic to feature in the app. There was also commentary suggesting interest in more modern usage of the park which could potentially prove to be a rich source of content.

Conclusions and implications for design

I feel that there is sufficient interest in the races to support using this as the main topic of the app. There is more scope for influencing people's attitudes if there is a baseline of lower interest and there is more potential for developing interest in a feature which is less known or appreciated. This feature (invisible and unknown) fits well with the aims of this research project hence it is appropriate to continue with this. If, however, this app was being developed for more commercial purposes then the more appropriate choice of content might be the war uses of the park and the war memorial.

Table 6-11 VIS Q3 results (Wilkinson, 2018)

4 About you and how you use your mobile phone

How frequently do you use your mobile phone for the following activities when you are out?

	Never	A little	A lot
Using Google maps (or similar) to navigate (on foot)	6	19	10
Posting or sharing something you have seen on Facebook or similar	15	10	10
Sharing an image on Instagram, P-interest or similar	25	7	3
Tweeting	24	11	0
Using the internet generally to find local information	5	12	18
Using a dedicated travel guide website or app for local information	23	10	2
Using a dedicated historical website or app as a guide	24	11	0

Analysis

Answers provided to this question provide sufficient evidence that people do use their phones on location for location based activities and that developing an app for use on Victoria Park is appropriate for these users. Current usage is more likely to be investigative, finding things out about the area than self-promotional eg: tweeting/sharing. Using a phone as a dedicated guide was very low which might raise questions for those who might consider apps for tourism, particularly in terms of marketing and promotion of such apps.

Conclusions and implications for design

There is sufficient current usage of phones on location to warrant the design of a prototype app. People are interested in using their phones to find out more about the location they are in. They are less interested in posting or tweeting, which suggests that these visitors might be less interested in the social collaboration activities which I have seen promoted by other research in this area. Inclusion of these features would need more investigation to ascertain which segment of users would find this useful.

Table 6-12 VIS Q4 results (Wilkinson, 2018)

5. If you were using a location-based product, such as a mobile phone app as a historical guide, which of the following activities would you prefer to do, with this app, on your mobile phone?

How you might use an app on your mobile phone as a historical guide and how you prefer to interact with your phone when you are on location? How do you like to receive information and would you like to contribute information?

	not at all	possibly	highly likely
Read some information about the location	0	18	17
Listen to some information being read to me about the location	8	15	12
Look at photographs and images associated with the location	1	15	19
Watch a video about the location	8	19	8
Leave a comment about the location which other visitors could read	14	15	7
Post your own photograph of the location	13	13	9
Read comments and/or look at photos that other visitors had left	7	17	11
Post a 'like' about the location	8	14	13
Play a game or do a quiz based on the location	15	15	5

Analysis

The highest preferences for actual phone usage were those which were more passive; receiving information visually through text and images and also audibly through listening to information being read to them. Less popular was using features such as posting, leaving comments or playing games. There might be a link to age with this, but the data would need further analysis to confirm this and the data set is perhaps too small to draw significant conclusion. There were comments that games would be attractive, particularly for children. Whilst people were interested in videos there was concern that they might drain batteries and data usage.

Conclusions and implications for design

For this group of people it will be better to use text as the primary presentation medium. There is sufficient acceptance of photographs, video and sound provided that issues regarding data and battery usage are addressed. Despite research with promotes the use of sharing information and gamification there is no real supporting evidence that either of these features would be preferred by these visitors to the Park.

Table 6-13 VIS Q5 results (Wilkinson, 2018)

6. If you were using a location-based product, such as a mobile phone app as a historical guide, which of the following activities do you feel would most enhance your visit to the historical location?

Which of the following activities helps you to engage most with the history of the location

	not at all	A little	a lot
Reading some information about the location	1	16	18
Listening to some information being read to me about the location	9	14	12
Looking at photographs and images associated with the location	1	9	25
Watching a video about the location	9	16	10
Leaving a comment about the location which other visitors could read	26	10	5
Posting my own photograph of the location	18	10	7
Reading comments and/or look at photos that other visitors had left	9	17	9
Posting a 'like' about the location	17	11	7
Play a game or do a quiz based on the location	20	10	5

Analysis

Attitudes towards engagement pretty much mirror the behavioural preferences with the more passive operations being preferred over the more interactive and responsive. One difference noted here was the popularity of looking at photos and how engaging people would find this. Another deviation between the results of usage and the results for engagement is that the figures for 'not at all' are higher in relation to the usage figures, suggesting that there is potential for these features to engage them, but that this might challenge current behavioural preferences regarding phone usage.

Conclusions and implications for design

Much of this is similar to the previous question on preferences for usage, with the one exception regarding photographs. This would suggest that using photos and images is an important element to include in the design.

Table 6-14 VIS Q6 results (Wilkinson, 2018)

7. What interests you most about a historic locations?

Allocate 1 for the factor which interests you least up to 4 for the factor which interests you most	1	2	3	4
The people who used to be there	18	1	7	9
Events that happened	1	11	12	11
The buildings	6	17	6	6
The historical importance of the site	10	6	10	9

Analysis

Analysis of this data was quite tricky as there does not appear to be any clear result or trend, for example, 49% ranked 'the people who used to be there' as the thing which interested them least, however 24% ranked this the think which interested them most. The scores were evenly balanced with 'events that happened' narrowly topping the highest rankings.

Conclusions and implications for design

It is difficult to draw any precise design recommendations from this data, however since 'events that happened' seems important it would support the inclusion of the races as content.

Table 6-15 VIS Q7 results (Wilkinson, 2018)

8. If you were to visit Victoria Park with a location-based application on your mobile phone which of the following activities would be most important to you?

What makes you feel that you have really engaged with a location?

Allocate 1 for the factor which is least likely to make you feel engaged up to 5 for the factor which would make you feel most engaged	**1**	**2**	**3**	**4**	**5**
Learning something new	0	6	8	9	12
Having fun	8	11	6	5	5
Sharing thoughts and ideas with others	18	7	5	3	2
Understanding more about the past	3	1	7	13	11
Increasing my empathy and attachment to the location	6	10	9	5	5

Analysis

The data strongly indicates that learning something is felt to be important for people to engage with the location. Not surprisingly, given the responses to other questions on sharing, sharing thoughts and ideas with others is not considered important for engagement. Cognitive engagement, such as learning and understanding are most valued in terms of engagement, however this might be a visitor expectation of historical interpretation which would typically intend to teach or enlighten.

Conclusions and implications for design

People like to learn things and feel that enhancing understanding increases their engagement with the location. This mirrors the findings of earlier research on the Cultural Quarter apps where people were very keen to have information to provide context for their experience. The experience created by the app, in itself, no matter how entertaining or attractive is not sufficient to provide a full and satisfying engaging experience. Visitors like and require sufficient and appropriately detailed content to provide context to enable them to understand and make meaning of their visitor experience.

Table 6-16 VIS Q8 results (Wilkinson, 2018)

9. Demographics

The total number of responses received was 35. The percentages of each demographic are shown below:

Female	49%	Male	51%

18-25	26-35	36-45	46-55	56-65	66-75
11%	17%	14%	34%	17%	6%

I live less than a mile from Victoria Park	I work near Victoria Park	I am a visitor to Leicester	Location not answered
46%	60%	3%	17%

Table 6-17 VIS Q9 results (Wilkinson, 2018)

6.2.8.2.6 Analysis of results

Visitors and the Park	Everyone who answered the survey has some sort of relationship with the park and all respondents have visited the park. The most regular activities appear to be walking through the park as part of a commute to other places, running and jogging, all of which are potentially solitary activities. The most popular activities appear to be more social and less regular, such as coming to major events or being with family and friends all of which are done once or twice a year. Other activities which appeared less popular might perhaps be more specialist and not therefore represented within the group of 35 people who took part in the survey, for example, walking the dog and taking part in the weekly Park Run. The low usage of the outdoor gym and the dedicated sports facilities is interesting though again this might be more reflective of the participants than park usage as a whole.
Features – knowledge and interest	Most people reported having at least some knowledge of the Arch of Remembrance (War Memorial) which is not surprising as it is one of the most prominent features in the park both in terms of appearance and location. The war memorial is also well publicised and the focus of the city's memorial activities on Armistice Day. It is a popular and familiar local land mark. The decrease in knowledge about the features appears to broadly correspond to the age of the feature and perhaps its visibility, so the older or less obvious something is, the less people know about it. The levels of interest appear to correlate closely to the levels of knowledge and perhaps this has influenced the things in which people have expressed an interest. The War Memorial is a well-known landmark and there is popular interest in the war which I think is reflected in the numbers of those who were interested in the items associated with the war. It is possible that more people would be interested in such things as the races or the Coxwell Balloon riot if they were more aware of these things. Anecdotal evidence from discussions with people would support this notion as people have always expressed interest when they have been told about these events. These results don't demonstrate a strong interest in knowing more about the races, however in the commentary two people expressed an interest in knowing more about the race course, which is another indicator that this could be an appropriate topic to feature in the app. There was also some notable commentary suggesting interest in more modern usage of the park which could potentially prove to be a rich source of content.
Phone usage and preferred behaviours	There is sufficient evidence that people do use their phones on location for location based activities and that developing an app for use on Victoria Park is appropriate for these visitors. Current preferred usage is more likely to be investigative, finding things out about the area, than self-promotional eg: tweeting/sharing. Using a phone as a dedicated guide was very low which might raise questions for those who are considering developing apps for tourism, particularly in terms of the marketing and promotion of such apps. The highest preferences for actual phone usage were those which were more passive; receiving information visually through text and images and also audibly through listening to information being read to them. Less popular were features such as posting, leaving comments or playing games. There might be a link to age with this, but the data would need further analysis to confirm this and the data set is perhaps too small to draw significant conclusion. There were comments that games would be attractive, particularly for children. Whilst people were interested in videos there was concern that this might drain battery and data usage. Attitudes towards engagement pretty much mirror the behavioural preferences with the more passive operations being preferred over the more interactive and responsive. One difference of note was the popularity of looking at photos and how engaging people would find this. Another deviation between the results of usage and the results for engagement was that the figures for 'not at all' were higher in relation to the usage figures, suggesting that there is potential for these features to be engaging, but that this might challenge current behavioural preferences regarding phone usage.

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Interest in history	Analysis of this data was quite tricky as there does not appear to be any clear result or trend, for example, 49% ranked 'the people who used to be there' as the thing which interested them least, however 24% ranked this the thing which interested them most. The scores were evenly balanced with 'events that happened' narrowly topping the highest rankings.
Engagement	The data strongly indicates that 'learning' something was felt to be important for people to engage with the location. Not surprisingly, given the responses to other questions on sharing thoughts and ideas with others was not considered important for engagement. Cognitive engagement, such as learning and understanding were most valued in terms of engagement, however this might be a visitor expectation of historical interpretation which would typically intend to teach or enlighten.

Table 6-18 VIS analysis (Wilkinson, 2018)

6.2.8.2.7 Conclusions and implications for design

Visitors and the Park	The results of this question are of interest as I can identify two categories of visitor the App might engage, the loan regular commuter and the occasional social/leisure visitor. As a consequence of this I will consider developing two different apps to support two different visitor experiences.
Features – knowledge and interest	I feel that there is **sufficient interest in the races to support using this as the main topic of the app**. There is more scope for influencing people's attitudes if there is a baseline of lower interest and there is more potential for developing interest in a feature which is less known or appreciated. This feature (invisible and unknown) fits well with the aims of this research project hence it is appropriate to continue with this. If, however, this app was being developed for more commercial purposes then the more appropriate choice of content might be the war uses of the park and the war memorial
Phone usage and preferred behaviours	There is **sufficient current usage of phones on location to warrant the design of a prototype app**. People are interested in using their phones to find out more about the location they are in. They are less interested in posting or tweeting, which suggests that these visitors might be less interested in the social collaboration activities which I have seen promoted by other research in this area. Inclusion of these features would need more investigation to ascertain which segment of users would find this useful For this group of people it will be better to use text as the primary presentation medium. There is sufficient acceptance of photographs, video and sound provided that issues regarding data and battery usage are addressed. Despite research with promotes the use of sharing information and gamification there is no real supporting evidence that either of these features would be preferred by these visitors to the Park

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Interest in history	It is difficult to draw any precise design recommendations from this data, however since 'events that happened' seems important it would support the inclusion of the races as content.
Engagement	**People like to learn things and feel that enhancing understanding increases their engagement** with the location. This mirrors the findings of earlier research on the Cultural Quarter apps where people were very keen to have information to provide context for their experience. The experience created by the app, in itself, no matter how entertaining or attractive is not sufficient to provide a full and satisfying engaging experience. **Visitors like and require sufficient and appropriately detailed content to provide context** to enable them to understand and make meaning of their visitor experience.

Table 6-19 VIS conclusions and implications for design (Wilkinson, 2018)

Limitations of the survey

The total number of survey respondents was 35 which is a fairly small sample size. Time and budget constraints limited the survey to being on-line only, as opposed to meeting people directly on the park. This will have restricted the survey to those with internet access and those who were reached through the on-line promotions via local groups and through direct email with the researcher.

Notable groups who do not appear to be represented include students from either the adjacent 6th Form college or the University of Leicester, people who use the sports facilities on the park, those who participate in the weekly Park Run or regular visitors to either De Montfort Hall or the Pavilion.

Table 6-20 VIS limitations of survey (Wilkinson, 2018)

Key Design Recommendations

- Consider designing two apps to meet the needs of two different visitor segments: the lone regular commuter, the occasional social/leisure visitor
- Feature the race course and the annual races as the main content in the app as there is sufficient interest to suggest people would find this attractive and an appropriate level of existing knowledge to build on. The races and the race course also fulfil the design criteria of being both lost and invisible.
- Using phones to provide locally based information is appropriate for people who use the park as they are already doing this in other locations. The supports the view that a location based app is an appropriate product for engaging people with the park
- Allow people to read much of the content
- Videos can be included but the design will need to consider minimum use of battery and data
- Include sound as this may be considered less distracting from the external environment, allowing the visitor to continue looking at the actual location.
- Include photos and images as these are considered to be an engaging from of media
- People are interested in events that happened so this confirms the races is appropriate focus for the content for the app
- Provide informative content to allow visitors to learn about and understand the location

Table 6-21 VIS key design recommendations (Wilkinson, 2018)

6.2.9 Process 1.3 A2 analyse ideas for audience

Using information from the previous activities the requirements for the prototype product were clarified in part 2 of the *Requirements Checklist* (table 6-22 below).

Part 3 - Process 1.3 Audience	
Be used by children	N/A
Be used by adults	✓
Support visitor motivation - to learn	✓
Support visitor motivation - to have fun	✓
Support visitor motivation - to understand	✓
Support visitor motivation - to share experience	N/A
Support visitor motivation - to interact with others	N/A
Support visitor motivation - to contribute to the experience	N/A
Support visitors who are new to location	N/A
Support visitors who already in relationship with the location	✓
Support visitors who regularly use the location	✓
Support the length of visitor stay	✓
Support visitor learner preferences	✓
Support communication preferences - visual	✓
Support communication preferences - audio	✓
Support communication preferences - reading	✓
Attract new audience	N/A
Support the interest of the visitor	✓
Other:	N/A

Table 6-22 Victoria Park Requirements Checklist part 3 (Wilkinson, 2018)

6.2.10 Process 1.3 A3 produce Requirements Document

Part 3 of the *Requirements Document* was completed mapping the identified product requirements with suggested features to propose appropriate design features for the prototype (table 6-23 page 6-267).

Part 3: Stage 1 Context/Process 1.3 Audience

Potential Requirement *Suggested Features*	**Product Requirements**	**Proposed Design Feature for the Uncover-Discover Victoria Park prototype app**
Used by children *Age specific content* *Age specific delivery*	Not applicable	Not addressed
Used by adults *Age specific content* *Age specific delivery*	Enable comfortable usage by a range of age – child to adult – this prototype is not designed with any age in mind as should be as accessible as possible	Good usability design – make sure things can be seen and read easily. Remove barriers by making things intuitive and simple. Navigation and functionality should be clear and easy to use.
Visitor motivation - to learn *Information*	Enable visitors to learn something	Comprehensive content, layered to allow visitors to control how much they access
Visitor motivation - to have fun *Games* *Entertaining content*		
Visitor motivation - to understand *Information meaningful to the visitor* *Evocative content - stories* *Evocative content - characters/people*	Enable to visitors to understand the location by providing authentic content	All information is related to Victoria Park and local surroundings
Visitor motivation - to share experience *Social media functionality* *User-generated content*	Not applicable	Not addressed
Visitor motivation - to interact with others *Social media functionality* *User-generated content*	Not applicable	Not addressed
Visitor motivation - to contribute to the experience *User-generated content*	Not applicable	Not addressed
Visitor new to location *Information*	Not applicable	Not addressed
Visitor already in relationship with the location *Layered information*	Address the needs of the occasional social/leisure visitor by providing stories based on the factual content with a rich level of detail so that there will be something included which they do no already know	Animated videos Narrated stories with character Layered content
Visitor a regular user of the location *Frequent additions to content*	Address the needs of the lone/regular commuter	Short experiences – regularly updated. Short narrated stories – a story a day
Support the length of visitor stay *Appropriate length of visit experience*	Allow visitor choice in how long they stay at a particular Point of Interest or how long they spend on the visit in total	Provide stories and content in short 'chunks' to allow the visitor to use as little or a much as they want. Narrated stories should last around 6 minutes, this is how long it typically takes to walk through the park. Animations should be around 2 minutes and articles should take no more

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		than a minute to read. This should suit the attention span of an average visitor who is outside
Support visitor learner preferences *Multi-media presentation* *Mixed-media presentation*	Support a range of learner preferences with different options and visitor choice as to how they receive the stories. Allow the visitor to listen and look at the same time	Include narrated stories, factual race reports, written information, animated versions of the story – for each Point of Interest Narrated stories with no supporting visual content – visitor can put device in pocket and just listen, and look
Support communication preferences - visual *Images and photographs* *Animations* *Video*	Provide images for visual learning preferences for each Point of Interest	Animated videos Maps Photographs/Images/Postcards
Support communication preferences - audio *Sound effects* *Narration*	Provide audio versions of the information for each Point of Interest	Narrated stories Sound effects to embellish the animations and the stories Attraction sounds for each Point of Interest
Support communication preferences - reading *Written word*	Provide written versions of the information for each Point of Interest	Read the Leicester Chronicle option. Include articles from the Leicester Chronicle for the visitor to read
Attract new audience *Presentation methods attractive to new target audience* *Information attractive to new target audiences*	Not applicable	Not addressed
Support the interest of the visitor *Information attractive to the visitor*	Use authentic content to maintain the interest of the visitor. Feature the annual races and the race course (interest in this is supported by the findings of the VIS)	Points of Interest based on the races and storied drawn from the race reports in the Leicester Chronicle

Table 6-23 Victoria Park Requirements Document part 3 (Wilkinson, 2018)

6.3 Stage 2 Engagement

A full description of the researcher's completion of this phase follows.

6.3.1 Process 2.1 A1 identify attraction states

To define the *attraction* elements of the prototype the researcher completed part 4 of the *Creator Questions*. Answers are provided in table 6-24 page 6-269.

Stage 2: Engagement

Part 4	Process 2.1 Attraction
How does the product 'attract' the audience? What is the hook?	The prototype will use sound as an attraction feature with the inclusion of location-aware sound effect, triggered when the visitor is close to a Point of Interest. This feature has already been established as successful in attracting visitors to specific areas within a location (please see for the results of the VEHMAS study) and whilst an 'attraction sound' will be included for each Point of Interest in the prototype it will not be a fully functioning element and will not form part of the overall evaluation study.
What does the product make the audience stop and look?	The prototype product will deliver information at each Point of Interest. The information will be contextual and will relate directly to that location (as far as is possible). Content will be presented in such a way that it directs the visitor to look around them and consider the local environment (for example: a narrator in a story might refer to something which they can see, photographs and images of the park will be used to illustrate how that particular area once looked)
Do you know what your audience finds attractive?	The results of the Visitor Interest Survey (see Process 1.3 Audience above) provide good information as to what the target audience for this prototype would find attractive and interesting. The study confirms that the history of the races is an appropriate topic to feature and would be valued by the target audience for this project. In terms of audience behaviour it is also clear that this segment of visitors is largely less interested in using their phones for social activities such as sharing and posting and would prefer a more passive experience.
Are you prepared to shock/challenge your audience to attract them?	Yes! There are elements of the stories surrounding the races which might shock the visitor for example deaths and accidents at the races, petty crimes and riots.
Do you want your audience to discover things by themselves?	The VEHMAS study (see chapter xxx) provided evidence that visitors found the opportunity to wander and discover valuable and added to their enjoyment of their visit to the Cultural Quarter. The design of the prototype app for Victoria Park does allow for visitor discover as it can be used without following a prescribed route, however, for the purposes of this study and to facilitate collection of consistent data the evaluation study required that visitors followed the same route and in the same way.
Does the product have a prescribed route to follow?	The prototype app does provide a prescribed route, although visitors also have the option to explore the area at will, responding to such features as the attraction sounds. As explained above, the nature of the evaluation visit required participants to follow a prescribed route. Evidence from secondary research and preliminary studies suggest that there is value in supporting visitors to do so if they choose.

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Does it matter if the audience does not see everything?	The prototype app has been designed to allow for visitors to see as much or as little as they like and to visit as many or as few Points of Interest as they feel necessary. Note that the evaluation study required all visitors to visit five Points of Interest, a subset of the ten which have been included in the design.
Does your product need to cope with an over-popular attraction?	No, Victoria Park is a large, open location and groups of people in one spot would not cause congestion or difficulty in viewing a Point of Interest.
How can your product provide 'pre-visit' attraction – tasters etc	Pre-visit features were not included in the design as the researcher did not want research participants experiencing the app or its content outside of the research study visit. However, the app has been designed with the view to having additional digital content available in an on-line format to support extended engagement after the visit and this content could just as easily be made available to visitors before they go to the Park.

Table 6-24 Victoria Park Creator Questions part 4 (Wilkinson, 2018)

6.3.2 Process 2.1 A2 identify design features for attraction

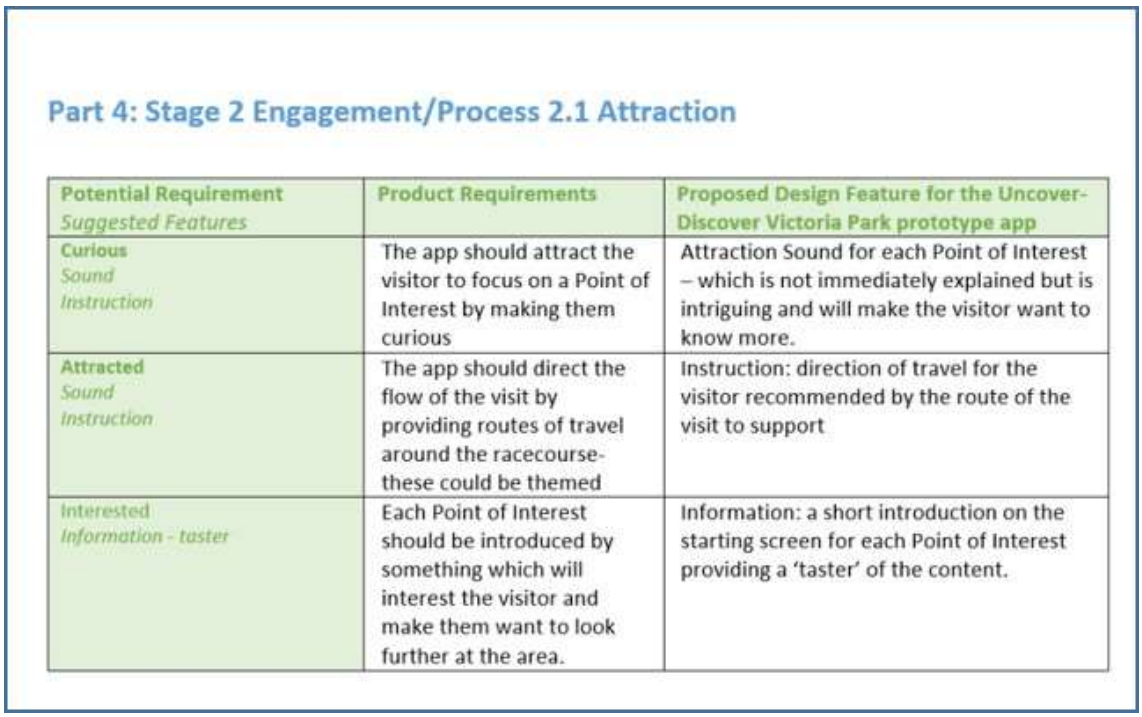
Using the framework the researcher identified *sound*, *instruction* and *information* as design features to include in the prototype and completed the *Design Requirements Checklist*, figure 6-25 page 6-271.

6.3.3 Process 2.1 A3 produce Requirements Document

Part 4 of the *Requirements Document* was completed mapping the identified product requirements with suggested features to propose appropriate design features for the prototype (table 6-26 page 6-272).

Stage 2: Engagement	
Part 4 - Process 2.1 Attraction	
Features to Include:	**Yes/No**
Sound	✓
Instruction	✓
Reward	No
Information	✓
Ideas to try...	**How might you do this?**
A prescribed route to keep people moving from place to place – with the visitor being attracted to the next location.	Points of Interest will be located around the nineteenth century racecourse and the visitor will have the option to follow this route if desired. Participants in the Evaluation Study will be required to follow a specified route (see Chapter 3 Methodology for details).
A 'guide' in the form of a person advising them where to go and what to look at	The 'guide' will be presented in subtle ways within the app. Stories will be narrated in the first person providing the impression of a person showing the visitor round, pointing out things which are happening and sharing their experiences as they happen. The navigation route of the racecourse provides a path to follow and a guide through the stories of the races. During the Evaluation Study the researcher will provide navigational support but no information, other than that which is available in the app.
'Shouting at them' – look at this, look at that/roll up	The 'attraction sounds' for the Points of Interest will be selected to catch the attention of the visitor and included such things as the sound of galloping horses, singing and arrows piercing targets.
Location - triggered sounds	The 'attraction sounds' are included to indicate that the visitor is at or near a Point of Interest
A visually attraction which invites the visitor to take a closer look	Images of the park in the past will be included in the additional digital content for visitor to explore if they wish. The lack of tangible or visible heritage on the park is a challenge in attracting people to a Point of Interest – there is very little, if anything to see.
'Challenges/tasks' for the visitor to complete	The prototype app will not include much in the way of challenges or tasks. This is in response to the Visitor Interest Survey which indicated that the target group in question was not likely to engage in proactive behaviours. Gamification, posting images, leaving comments are all features which will be omitted from the design of this particular version of the prototype app.

Table 6-25 Victoria Park Design Requirements Checklist part 4 (Wilkinson, 2018)



Part 4: Stage 2 Engagement/Process 2.1 Attraction

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature for the Uncover-Discover Victoria Park prototype app
Curious *Sound* *Instruction*	The app should attract the visitor to focus on a Point of Interest by making them curious	Attraction Sound for each Point of Interest – which is not immediately explained but is intriguing and will make the visitor want to know more.
Attracted *Sound* *Instruction*	The app should direct the flow of the visit by providing routes of travel around the racecourse- these could be themed	Instruction: direction of travel for the visitor recommended by the route of the visit to support
Interested *Information - taster*	Each Point of Interest should be introduced by something which will interest the visitor and make them want to look further at the area.	Information: a short introduction on the starting screen for each Point of Interest providing a 'taster' of the content.

Table 6-26 Victoria Park Requirements Document part 4 (Wilkinson, 2018)

6.3.4 Process 2.2 A1 identify absorption states

To define the *absorption states* of the prototype the researcher completed part 5 of the *Creator Questions*. Answers are provided in table 6-27 page 6-273.

6.3.5 Process 2.2 A2 identify design features for absorption

Using the framework the researcher identified information, *stories*, *character*, *sound* and *interactivity* as core design features to include in the prototype, figure 6-28 page 6-274.

6.3.6 Process 2.2 A3 produce Requirements Document

Part 5 of the *Design Requirements Document* was completed to propose appropriate design features for the prototype (table 6-29 page 6-274).

Part 5	Process 2.2 Absorption
What sort of experience most meets the requirements of the context identified in Process 1: Context?	The results of the Visitor Interest Survey establish the need to create a more passive then interactive experience with a focus on learning and enjoyment
Are you looking for cognitive/emotional engagement or both and what will you include in the design to facilitate either?	Both – cognitive because the targeted visitor group has expressed a motivation to learn from their visit and emotional as this will generate stronger connection and a richer overall experience
Is this an interactive or a passive experience?	Largely passive- as prescribed by the results of the Visitor Interest Survey
How long do you want the visitor to engage for?	This an outdoor experience and as such will be somewhat dependant on the weather and possibly the physical fitness of the visitor. Engagement could be as short as ten minutes or as long as a couple of hours but should be delivered in such a way that the visitor can disengage at any point between these two measures and still have a satisfying experience
How does your design support lengthy engagement	The location of the Points of Interest are sited, as far as possible, near to park benches enabling the visitor to sit down to engage with the prototype app if they wish
Is the product providing a personal or shared experience, or both?	The prototype app is designed as a personal experience. Shared experiences were not reported as popular by the target visitor group
How does the product manage engagement with both the location and the product itself?	The visit is designed around the 19th century race course, a route which is no longer visible. It is not represented in the existing pathway pattern of the Park and is not a route visitors would naturally take within the park. In order to follow this route the visitor will need to use the maps and location information in the app to orientate themselves as if they were on the racecourse. Similarly the Victorian Grandstand no longer exists and the visitor will have to look at the location themselves to work out where it was and what it was like.
How does the product activity add value and engage the visitor?	A variety of activities will be used (animation, narrated story, articles from the Leicester Chronicle) to provide a rich layer of information which will be more comprehensive than visiting with a personal guide or with a book.

Table 6-27 Victoria Park Creator Questions Part 5 (Wilkinson, 2018)

Stage 2: Engagement	
Part 5- Process 2.2 Absorption	
Features to Include:	**Yes/No**
Information – authentic	✓
Information – sufficient	✓
Information - delivery matches to visitor learning preferences	✓
Information - integral to the heritage	✓
Information – meaningful to the visitor	✓
Information – stimulating (visual/audible)	✓
Stories	✓
People/Character	✓
Challenging activity	**No**
Sharing activity	**No**
Games	**No**
Amusing activity	✓
Interactive activity - listening/looking/touching/moving	✓
Sound	✓
Visual information	✓
Interactive activity – looking/reading/listening/discussing/thinking	✓
Information to relate the visitor to the heritage	✓
Activity to relate the visitor to the heritage	✓

Ideas to try...	How might you do this?
Authentic content for those who want to learn	Content will be sourced from historically accurate sources and should be checked for authenticity. Contemporary race reports from the Leicester Chronicle will be used as an initial source of information. Further research will be required into events and characters using appropriate reliable historical sources.
Layered content to allow for differences in audience need	Additional content will be made available in digital format and layered into the design of the app. This content will be optional for those visitors who wish to explore further.
Contextually appropriate information – relevant to the location	All information presented should relate to Victoria Park, the 19th century races and the activities associated with these events. All visual and audio content should be contextually accurate.
Present content in a variety of ways to accommodate visitor learning preferences	A variety of presentation methods will be used including visual (images and animation), audio (narration and sound effects) and reading (source content).
Include character and stories to encourage empathy, understanding and connection	A range of 'stories' and characters will be developed from the source material (the Leicester Chronicle articles) and presented in animations and narrated stories.
Allow visit choice where ever possible	A number of Points of Interest will be created. Visitors can access these randomly, by wandering through the park, or they can follow a prescribed route for exploring Points of Interest which have been plotted on to the course of the 19t Century racetrack.
Create tasks for the visitor to achieve	This will be limited for the prototype as the target visitor group was did not request proactive or interactive experiences, however the overall task of the visit will be to complete one circuit of the race course.

Table 6-28 Victoria Park Design Requirements Checklist part 5 (Wilkinson, 2018)

Part 5: Stage 2 Engagement/Process 2.2 Absorption

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature for the Uncover-Discover Victoria Park prototype app
Learning *Information – authentic* *Information – sufficient* *Information – delivery matches to visitor learning preferences*	The product needs to support effective learning opportunities by providing accurate and authentic information about the races using a variety of presentation methods for the content	Articles sourced from the Leicester Chronicle 1834-1873 Authentic images – historically accurate throughout Discover More Options: optional layered information beyond the initial content Presentation methods: newspaper articles, animated videos, narrated stories, narrated animations
Understanding *Information – integral to the heritage* *Information – meaningful to the visitor* *Information – immersive and evocative content*	The product needs to support effective understanding by the visitor of the location by providing accurate and authentic information about the races using immersive and evocative media	Information relating to visible landmarks Information relating to Victoria Park Images of Victoria Park sourced from postcards photographs and paintings Sound effects should be included in animations to evoke atmosphere Accurate and well researched historical information relating to Victoria Park and Leicester
Empathising *Stories* *People/Characters*	Stories should be included with direct links to the races and events which occurred – with interesting and appealing characters	Narrated stories based on the real life events in the Leicester Chronicle Characters based on real (or authentic) historical people
Enjoying *Challenging activity* *Sharing activity*	Stories and information should be entertaining – for example, snippets of facts, funny stories – not delivered in a dull fashion	Entertaining stories enhanced with sound effects and supported with visual images
Having Fun *Challenge activity* *Sharing activity* *Games* *Amusing activity*	Stories and information should be entertaining – for example, snippets of facts, funny stories.	Entertaining stories enhanced with sound effects and supported with visual images
Involved *Interactive activity – listening/looking/touching/ moving*	The product should encourage the visitor to look at their environment and think about the location, to make their own sense and meaning of it	Listening to narrated stories with evocative sound effects Looking at photographs and paintings of Victoria Park, Leicester City, the Memorial, Leicester Infirmary, Leicester Asylum Discover More options with layered content
Immersed *Sound* *Stories* *Visual information*	The product should make the visitor feel as though they have spent the day at the races – the fun, the excitement, the noise, the bustle and the danger should all be presented through the delivery of the content	Evocative sound effects Authentic characters First person narration Visual imagery of Victoria Park Discover More options with layered content
Interacting	The visitor should doing things as a result of using	Original Leicester Chronicle articles Historically authentic sound effects

Looking / Reading / Listening / Discussing / Thinking	the interpretive digital media – they should be listening – looking and thinking – thinking about the races and what it would have been like to have been there.	Historically authentic pictures Comprehensive, evocative and provocative information presented through stories and animation
Connected *Information to relate the visitor with the heritage* *Activities to relate the visitor to the heritage*	The product should enable the visitor to feel connected with the park and be able to relate the stories and content directly to where they are standing	Information which is directly relevant to Victoria Park

Table 6-29 Victoria Park Design Requirements Document (Wilkinson, 2018)

6.3.7 Process 2.3 A1 Identify disengagement states

To define the *disengagement* elements of the prototype the researcher completed part 6 of the *Creator Questions*. Answers are provided in table 6-30 below.

Part 6	Process 2.3 Disengagement
How does your product manage disengagement?	The prototype will be presenting a 'sample' of the content and the overall experience, however each Point of Interest has a flow (see answer below)
Does your product provide a natural flow, beginning, middle and end to the visit experience?	Each Point of Interest has a 'flow of activity' as follows. When visitor approaches the Point of Interest an attraction sound is triggered. The visitor triggers the content for the Point of Interest by tapping on the Point of Interest button. The visitor can then choose one or more of four options: read the Chronicle; watch the animation; listen to a narrated story; discover more about this location and the associated 'story'. Once the visitor has done as much as they want they can return to the original map. The visit itself is not prescriptive although the app does have a welcome page with instructions on usage, and an exit button to close down the app when the visit is completed.

Table 6-30 Victoria Park Creator Questions Part 6 (Wilkinson, 2018)

6.3.8 Process 2.3 A2 Identify design features for disengagement

Using the framework the researcher identified *instruction* and *completion* as core design features to include in the prototype table 6-31 page 6-277.

Stage 2: Engagement	
Part 6 - Process 2.3 Disengagement	
Features to Include:	Yes/No
Instruction	✓
Completion	✓
Ideas to try...	How might you do this?
Create a prescribed narrative for the visit with a clear end point	The app is not specifically designed to provide a prescribed route however visitors can follow a route if they wish as the Points of Interest are themed. For the prototype study visitors will be required to complete the route of the racecourse and as such there will be a sense of completion at the finishing post.
Include a disengagement/closure protocol	Navigation buttons to close the prototype at the end of the visit are provided. Navigation buttons to close down Points of Interest content and return to the main menu are included

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Table 6-31 Victoria Park Design Requirements Checklist part 6 (Wilkinson, 2018)

6.3.9 Process 2.3 A3 produce Requirements Document

Part 6 of the *Requirements Document* was completed mapping the identified product requirements with suggested features to propose appropriate design features for the prototype (table 6-32 below).

Part 6 Stage 2 Engagement/Process 2.3 Disengagement

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature for the Uncover-Discover Victoria Park prototype app
Leaving *Instruction Completion*	It should be clear to the visitor when the visit is complete, and when a particular Point of Interest is complete. The visitor should have choice and be in control of when this happens	An exit button facilitates leaving the app An exit button facilitates finishing a Point of Interest
Satisfied *Completion*	Completion is achieved when the visitor has accessed as much of the content and the overall experience as they feel necessary.	An exit button facilitates leaving the app An exit button facilitates finishing a Point of Interest

Table 6-32 Victoria Park Requirements Document (Wilkinson, 2018)

6.3.10 Process 2.4 A1 identify extended engagement states

To define the *extended engagement* elements of the prototype the researcher completed part 7 of the *Creator Questions*. Answers are provided in table 6-33 below.

Part 7	Process 2.4 Extended Engagement
Is engagement with the location limited to the visit?	Additional content will be made available digitally and available via the internet
What opportunities are there for post-visit engagement?	Additional content will be made available digitally and available via the internet
Can you build an on-going developing relationship with the audience	Additional content will be made available digitally and available via the internet
What would be the most appropriate method and media for this?	Additional content will be made available digitally and available via the internet
Do you want visitors to continue participating and contributing to experience post visit?	No

Table 6-33 Victoria Park Creator Questions part 7 (Wilkinson, 2018)

6.3.11 Process 2.4 A2 identify design features for extended engagement

Using the guidance the researcher identified information and character as design features to include in the prototype (table 6-34 below).

Stage 2: Engagement	
Part 7 - Process 2.4 Extended Engagement	
Features to Include:	Yes/No
Information	✓
Challenge	No
Stories	No
Characters	✓
Ideas to try...	How might you do this?
Provide on-line presence to facilitate continued connect with visitors	Additional content will be made available digitally and available via the internet
Establish networks with visitors through non-digital methods (newsletters /visitor interest registers/'friends' groups)	No
Use social media platforms to facilitate continued user/visitor contribution	No

Table 6-34 Design Requirements Checklist part 7 (Wilkinson, 2018)

6.3.12 Process 2.4 A3 produce Requirements Document part 7

Part 7 of the *Requirements Document* was completed mapping the identified product requirements with suggested features to propose appropriate design features for the prototype (table 6-35 below).

Part 7 Stage 2 Engagement/Process 2.4 Extended Engagement

Potential Requirement *Suggested Features*	Product Requirements	Proposed Design Feature for the Uncover-Discover Victoria Park prototype app
Curious *Information/Challenge*	The product should support the ongoing curiosity of the visitor beyond the visit	Additional digital content with more information about the stories covered in the app providing more context and background in relation to people, events and links to other locations in Leicester or to other historical events.
Inspired *Information/Stories/ Characters/Challenge*	The product should support the inspired visitor who wants to know more, beyond the visit	
Interested *Information/Stories*	The product should support the ongoing interest of the visitor beyond the visit	

Table 6-35 Victoria Park Requirements Document part 7 (Wilkinson, 2018)

Completion of *Stage 2* of the *Guide* produces a set of design features for each of the engagement states, to be included in the prototype app as outlined in the table 6-36 page 6-280.

Completion of stage two of the project framework confirms the *content* required for the prototype (table 6-37 page 6-281)

Stage of Engagement	State of Engagement	Proposed Design Features for the UDVP prototype app
Attraction	Curious	Attraction Sound for each Point of Interest
	Attracted	Instruction: direction of travel for the visitor recommended by the route of the visit to support
	Interested	Information: a short introduction on the starting screen for each Point of Interest providing a 'taster' of the content.
Absorption	Learning	Articles sourced from the Leicester Chronicle 1834-1873 Authentic images – historically accurate throughout Discover More Options: optional layered information beyond the initial content Presentation methods: newspaper articles, animated videos, narrated stories, narrated animations
	Understanding	Information relating to visible landmarks Information relating to Victoria Park Images of Victoria Park sourced from postcards photographs and paintings Accurate and well researched historical information relating to Victoria Park and Leicester
	Empathising	Narrated stories based on the real life events in the Leicester Chronicle Characters based on real (or authentic) historical people
	Enjoying	Entertaining stories enhanced with sound effects and supported with visual images
	Having Fun	Entertaining stories enhanced with sound effects and supported with visual images
	Involved	Listening to narrated stories with evocative sound effects Looking at photographs and paintings of Victoria Park, Leicester City, the Memorial, Leicester Infirmary, Leicester Asylum Discover More options with layered content
	Immersed	Evocative sound effects Authentic characters First person narration Visual imagery of Victoria Park Discover More options with layered content
	Interacting	Original Leicester Chronicle articles Historically authentic sound effects Historically authentic pictures Comprehensive, evocative and provocative information presented through stories and animation
	Connected	Information which is directly relevant to Victoria Park
Disengagement	Leaving	An exit button facilitates leaving the app An exit button facilitates finishing a Point of Interest Completion is achieved when the visitor chooses to leave
	Satisfied	Completion is achieved when the visitor has accessed as much of the content and the overall experience as they feel necessary.
Extended Engagement	Curious	Additional digital content with more information about the stories covered in the app providing more context and background in relation to people, events and links to other locations in Leicester or to other historical events.
	Inspired	
	Interested	

Table 6-36 Proposed DESIGN FEATURES (Wilkinson, 2018)

Stage of Engagement	State of Engagement	Proposed CONTENT for the UDVP prototype app
Attraction	Curious	Attraction sounds
	Attracted	A route of travel for the visit
	Interested	Introductory/taster information.
Absorption	Learning	Authentic historical information Authentic images – historically accurate throughout Additional information – sufficient to support learning
	Understanding	Information relating to visible landmarks Information relating to Victoria Park Images of Victoria Park sourced from postcards photographs and paintings Accurate historical information relating to Victoria Park and Leicester
	Empathising	Stories based on the real life events relating to Victoria Park Characters based on real (or authentic) historical people
	Enjoying	Entertaining stories enhanced with sound effects and supported with visual images
	Having Fun	Entertaining stories enhanced with sound effects and supported with visual images
	Involved	Narrated stories with evocative sound effects Photographs and paintings of Victoria Park, Leicester City, the Memorial, Leicester Infirmary, Leicester Asylum Additional information – sufficient to support learning
	Immersed	Evocative sound effects Authentic characters First person narration Visual imagery of Victoria Park Additional information – sufficient to support learning
	Interacting	Original Leicester Chronicle articles Historically authentic sound effects Historically authentic pictures Comprehensive, evocative and provocative information presented through stories and animation
	Connected	Information which is directly relevant to Victoria Park
Disengagement	Leaving	Navigation flow
	Satisfied	Sufficient content to satisfy visitor interest
Extended Engagement	Curious	Additional digital content with more information about the stories covered in the app providing more context and background in relation to people, events and links to other locations in Leicester or to other historical events.
	Inspired	
	Interested	

Table 6-37 Proposed CONTENT (Wilkinson, 2018)

6.4 Stage 3 Product design

6.4.1 Process 3.1A1 specify the design

The first activity completed within the *Design stage* was the creation of the *Product Specification Document*. Using the ideas recorded in the *Requirements Document*, as

completed in the previous stage of the Guide the specification for the prototype was established. Full details of the overall product specification are described here (table 6-38 pp 6-282 and 6-283).

Findings from the preliminary studies confirmed that technological issues such as downloading data from the internet, inaccurate location identification, and insufficient Wi-Fi access were significant distractions for visitors and had a negative impact on the overall experience of using the interpretive digital media on location. The use of different platforms also affected the research results making it difficult to measure engagement as visitor were disengaged from the experience because their technology didn't work. Since the focus of this study is the content and delivery of the material not the hardware platform or the effectiveness of the software, the decision was made to create pre-loaded mock-up versions of both the prototype app and the additional digital content on Apple i-pad minis. The same Apple-i-pad minis were used by the researcher for the Mobile Apps study creating continuity with that study.

Context	
Cultural Heritage Location	Victoria Park, Leicester
Intended Audience	• Regular 'commuter' visitor • Occasional visitor
Purpose of the Product	To enable to visitor to: • gain more knowledge about the 19th century races • increase their appreciation of Victoria Park and its cultural heritage
Engagement	
Attraction	• Attraction Sound for each Point of Interest • Map and recommended route
Absorption	• Race reports from the Leicester Chronicle • Animated videos to enhance and present the race reports • Narrated stories to evoke the experience of being at the races with sound effects • Additional digital content for each Point of Interest
Disengagement	• Map and with local landmarks for orientation (to avoid getting lost and therefore disconnected) • Visitor controlled exit protocol from the app
Extended engagement	• Additional digital content available externally to the UDVP prototype app

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Functionality and Features	

Features	The content for the UDVP prototype is delivered through five Points of Interest using the following features.
	
	Screens:
	• Welcome screen
	• Instruction screen
	• Main map screen
	• Screens for each Point of Interest:
	  ○ Point of Interest Map screen
	  ○ Leicester Chronicle Race Report screen
	  ○ Animation screen
	  ○ Story screen
	Buttons:
	• Main map
	• Point of Interest buttons (x 5 on map)
	• Read to the story (x5)
	• Watch the story (x5)
	• Hear the story (x5)
	• Discover more
	• Instructions
	• Exit (Finishing Post)
	• Landmarks (x10)
	
	Contributor Assets:
	• Point of Interest animated video (x5)
	• Point of Interest narrated story (x5)
	• Point of Interest Leicester Chronicle Race Reports

Sources of Content	Leicester Chronicle 1834-1883 Books etc quote some key ones and do others as general for background research into the stories, events, people and issues covered in the race reports Vintage postcard of Victoria Park Historical images of Victoria Park Historical paintings of 19th century horse racing/amusements/pickpockets/petty crime/police/ Contemporary maps of Victoria Park and Leicester City Historical maps of Victoria Park and Leicester City Images of people referred to in the race reports Music and sounds contemporary and authentic to the race report
Functionality	User responsive buttons (hotspots) to trigger the following: • display new screen • play animation • play sound • play narrated story • exit and close the app Location aware functionality (simulated)
Navigation	See navigation flowchart
Platform	Apple i-pad minis
Software	Microsoft PowerPoint (programmed with 'hotspots')

Table 6-38 Product Specification for prototype (Wilkinson, 2018)

A range of prototyping tools were investigated but time constraints and limitations in coding skills led to the decision to use Microsoft PowerPoint to create mock-up versions of both the prototype and the additional digital content. Test assets were created in

Microsoft Word, visual assets, including animations and images were prepared using Adobe Photoshop, Adobe Illustrator, Adobe Premier Pro and Adobe After Effects. Audio files were prepared using Audacity. Microsoft PowerPoint was used to create the screens for both products. Navigation and functionality was created through the use of hyperlinks programmed to button images. A full description of the creation process for the prototype app and the additional digital content is now provided. Note that for a fully functioning product the *Product Specification Document, Asset Plan*, *Asset Descriptions* and *Functionality Plan* would be used to communicate the design to programmers who would code the product using appropriate software.

6.4.2 Process 3.2 A1 design the assets

Activity 1 consists of three tasks and results in the production of three documents: the *Asset Plan*, *Asset Descriptions* and the *Functionality Plan*. A description of the completion of each of these tasks for this study is now provided. An *Asset Plan* was written according to the requirements outlined in the *Product Specification Document*. All individual assets for the prototype product were identified and listed in the *Asset Plan*. Assets are categorised as either Direct Assets or Contributor Assets. Direct Assets are those which will be seen or heard by the visitor and includes screens, buttons, images, recordings, text and video. Contributor Assets are those support the direct assets and includes scripts and storyboards. A summary of these assets is provided in table 6-39 below. A full list of all assets required for the prototype is provided in table 6-40 pp 6-285 to 6-287.

Item	Number Required
DIRECT OUTPUT ASSETS	
Screens	46
Buttons	39
Images	30
Text	18
Recordings	10
Videos	6
CONTRIBUTOR ASSETS	
Scripts	11
Storyboards	11

Table 6-39 Asset summary (Wilkinson, 2018)

DIRECT OUTPUT ASSETS	
Screens	**Buttons**
S01 Landing Screen	B01 First Time Here
S02 Welcome to Uncover-Discover Leicester Races	B02 Come on in
S03 Instructions 1 (1 of 2)	B03 Exit App
S04 Instructions 2 (2 of 2)	B04 Instructions
S05 Timeline	B05 Timeline
S06 Main Map	B06 Map
S07 POI 01 Map 'Staffordshire Girl'	B07 App Info
S08 POI 01 Map Introduction to 'Staffordshire Girl'	B08 Read On
S09 POI 02 Map 'Meet Me by Moonlight'	B09 Go back
S10 POI 02 Map Intro to 'Meet Me by Moonlight'	B10 POI Location 01
S11 POI 03 Map 'The Stranger'	B11 POI Location 02
S12 POI 03 Map Introduction to 'The Stranger'	B12 POI Location 03
S13 POI 07 Map 'Shocking Accident'	B13 POI Location 04
S14 POI 07 Map Introduction 'Shocking Accident'	B14 POI Location 05
S15 POI 10 Map 'The New Pavilion'	B15 POI Location 06
S16 POI 10 Map Introduction 'The New Pavilion'	B16 POI Location 07
S17 POI 01 'Staffordshire Girl' Chronicle Article	B17 POI Location 08
S18 POI 02 'Meet Me by Moonlight' Chronicle	B18 POI Location 09
S19 POI 03 'The Stranger' Leicester Chronicle (1 of 2)	B19 POI Location 10
S20 POI 03 'The Stranger' Leicester Chronicle (2 of 2)	B20 Landmark 01 De Montfort Hall
S21 POI 07 'Shocking Accident' Chronicle (1 of 2)	B21 Landmark 02 The Health Centre
S22 POI 07 'Shocking Accident' Chronicle (2 of 2)	B22 Landmark 03 The Lodges
S23 POI 10 'The New Pavilion' Chronicle (1 of 2)	B23 Landmark 04 The Memorial Arch
S24 POI 10 'The New Pavilion' Chronicle (2 of 2)	B24 Landmark 04 The Pavilion
S25 POI 01 Story 'Staffordshire Girl'	B25 Landmark 06 The Skate Park
S26 POI 02 Story 'Meet Me by Moonlight'	B26 Landmark 07 St James the Greater
S27 POI 03 Story 'The Stranger'	B27 Landmark 08 The Old Horse
S28 POI 07 Story 'Shocking Accident at the Races'	B28 Landmark 09 The University of Leicester
S29 POI 10 Story 'The New Pavilion'	B29 Finishing Post
S30 POI 01 Animation 'Staffordshire Girl'	B30 Return to Main Map
S31 POI 02 Animation 'Meet Me by Moonlight'	B31 Read the Chronicle
S32 POI 03 Animation 'The Stranger'	B32 Watch the Action
S33 POI 07 Animation 'Shocking Accident'	B33 Hear the Story
S34 POI 10 Animation 'The New Pavilion'	B34 Discover More
S35 Landmark 01 De Montfort Hall (1 of 2)	B35 Return to POI01 Map Screen
S36 Landmark 01 De Montfort Hall (2 of 2)	B36 Return to POI02 Map Screen
S37 Landmark 02 The Health Centre	B37 Return to POI03 Map Screen
S38 Landmark 03 The Lodges	B38 Return to POI07 Map Screen
S39 Landmark 04 The Memorial Arch	B39 Return to POI10 Map Screen
S40 Landmark 05 The Pavilion	
S41 Landmark 06 The Skate Park	
S42 Landmark 07 St James the Greater	
S43 Landmark 08 The Old Horse	
S44 Landmark 09 The University of Leicester (1 of 2)	
S45 Landmark 09 The University of Leicester (2 of 2)	
S46 App Info (not created)	

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Images		Text	
I01	Leicester Races Painting	T01	Welcome to Uncover-Discover Leicester Races
I02	Uncover-Discover Icon	T02	Instructions
I03	Leicester Races Icon	T03	Timeline animation introductory text
I04	Main Map	T04	Leicester Chronicle POI01 'Staffordshire Girl'
I05	POI01 'Staffordshire Girl' Background Map	T05	Leicester Chronicle POI02 'Meet Me By Moonlight
I06	POI01 Information Box 'Staffordshire Girl'	T06	Leicester Chronicle POI03 'The Stranger'
I07	POI02 'Meet Me by Moonlight' Background Map	T07	Leicester Chronicle POI07 'Shocking Accident'
I08	POI02 Information Box 'Meet Me by Moonlight'	T08	Leicester Chronicle POI10 'The New Pavilion
I09	POI03 'The Stranger' Background Map	T09	Landmark 01 Information De Montfort Hall
I10	POI03 Information Box 'The Stranger'	T10	Landmark 02 Information The Health Centre
I11	POI07 'Shocking Accident' Background Map	T11	Landmark 03 Information The Lodges
I12	POI07 Information Box 'Shocking Accident'	T12	Landmark 04 Information The Memorial Arch
I13	POI10 'The Pavilion' Background Map	T13	Landmark 04 Information The Pavilion
I14	POI10 Information Box 'The Pavilion'	T14	Landmark 06 Information The Skate Park
I15	Landmark 01 Icon Image De Montfort Hall	T15	Landmark 07 Information St James the Greater
I16	Landmark 02 Icon Image The Health Centre	T16	Landmark 08 Information The Old Horse
I17	Landmark 03 Icon Image The Lodges	T17	Landmark 09 Information University of Leicester
18	Landmark 04 Icon Image The Memorial Arch	T18	App Information (not created)
I19	Landmark 04 Icon Image The Pavilion		
I20	Landmark 06 Icon Image The Skate Park		
I21	Landmark 07 Icon Image St James the Greater		
I22	Landmark 08 Icon Image The Old Horse		
I23	Landmark 09 Icon Image University of Leicester		
I24	Image De Montfort Hall Concert		
I25	Image Contemporary Health Centre		
I26	Image The Lodges Postcard		
I27	Image Leicester City Council Regeneration Plan		
I28	Image St James the Greater Interior		
I29	Image The Old Horse		
I30	Image Leicester Chronicle Newspaper Header		

Recordings		Videos	
A01	Attraction Sound POI01 'Staffordshire Girl'	V01	Animation POI01 'Staffordshire Girl'
A02	Attraction Sound POI02 'Meet Me By Moonlight'	V02	Animation POI02 'Meet Me By Moonlight'
A03	Attraction Sound POI03 'The Stranger'	V03	Animation POI03 'The Stranger'
A04	Attraction Sound POI07 'Shocking Accident'	V04	Animation POI07 'Shocking Accident'
A05	Attraction Sound POI10 'The New Pavilion'	V05	Animation POI10 'The New Pavilion
A06	Narrated Story POI01 'Staffordshire Girl'	V06	Animation Timeline
A07	Narrated Story POI02 'Meet Me By Moonlight'		
A08	Narrated Story POI03 'The Stranger'		
A09	Narrated Story POI07 'Shocking Accident'		
A10	Narrated Story POI10 'The New Pavilion		

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CONTRIBUTOR ASSETS	
Scripts	**Storyboards**
SC01 Animation POI01 'Staffordshire Girl'	SB01 Animation POI01 'Staffordshire Girl'
SC02 Animation POI02 'Meet Me By Moonlight'	SB02 Animation POI02 'Meet Me By Moonlight'
SC03 Animation POI03 'The Stranger'	SB03 Animation POI03 'The Stranger'
SC04 Animation POI07 'Shocking Accident'	SB04 Animation POI07 'Shocking Accident'
SC05 Animation POI10 'The New Pavilion	SB05 Animation POI10 'The New Pavilion
SC06 Animation Timeline	SB06 Animation Timeline
SC07 Narrated Story POI01 'Staffordshire Girl'	SB07 Narrated Story POI01 'Staffordshire Girl'
SC08 Narrated Story POI02 'Meet Me By Moonlight'	SB08 Narrated Story POI02 'Meet Me By Moonlight'
SC09 Narrated Story POI03 'The Stranger'	SB09 Narrated Story POI03 'The Stranger'
SC10 Narrated Story POI07 'Shocking Accident'	SB10 Narrated Story POI07 'Shocking Accident'
SC11 Narrated Story POI10 'The New Pavilion	SB11 Narrated Story POI10 'The New Pavilion

Table 6-40 Asset list (Wilkinson, 2018)

Asset descriptions were produced to inform the design of each individual asset. Full details of every asset design can be found in Appendix 6A. Sample descriptions for each asset type are included here with explanations as to their completion.

Name	**Landing Screen**		**S01**
File Name	S01 Landing Screen (image capture of final version of asset)	*Asset Type*	*File Type*
		Screen	N/A
Description		*Thumbnail*	
The opening screen for the app and the first one that the visitor will see. The painting of the 19th century races provides the first authentic image of horse racing on Victoria Park. Options for both the returning visitor and the new visitor are provided, allowing the experienced visitor to skip the intros and welcome and go directly to the Main Map which is the main screen for visiting the Park.			

Functions		
Ref	*Name*	*Action*
B01	First Time Here	Go to screen S02: Welcome to Uncover-Discover Leicester Races
B02	Come on in	G to screen S06 Main Map

Supporting Assets (further details in this document)			
Ref	*Name*	*Type*	*File-name*
I01	Leicester Races Painting	Image	
I02	Uncover-Discover Icon	Image	
I03	Leicester Races Icon	Image	

Table 6-41 Sample Screen specification (Wilkinson, 2018)

Screen specifications include the name of the screen and a reference number which is derived from the *Product Specification Document*. The example provided in table 6-41 above is the first screen of the prototype app. Details of the look and functionality of this screen are provided in the description, as are the supporting assets required to create this screen.

Name	**First Time Here**		**B01**
File Name	B01 First time (image capture of final version of asset)	*Asset Type*	*File Type*
		Button	N/A
Description		*Thumbnail*	
Displayed on S01 Landing Screen – this button is designed for the first time visitor and provides access to the welcome and instruction screens.			
Operation	Go to S02 Welcome to Uncover-Discover Leicester Races		
Supporting Assets (see Asset Pack for full details)			
Ref	*Name*	*Type*	*File-name*
I41	*Horse Button Plain*	*Image*	*I41 Horse button plain*

Table 6-42 Sample Button specification (Wilkinson, 2018)

Button specifications include the name of the button and a reference number derived from the *Product Specification Document*. The example provided in table 6-42 above is the first button displayed on the opening screen of the prototype app. Details of the look and functionality of this button are provided in the description, as are the supporting assets required to create this button.

Name	**Leicester Races Painting**		**I01**
File Name	IO1 Leicester Races Painting	*Asset Type*	*File Type*
		Image	JPEG File
Description		*Thumbnail*	
This is the only known image of racing on Victoria Park. This painting is the key resource for the app and the main inspiration for the colour palette A Horse Race in Victoria Park, Leicester Edward Benjamin Herberte (active 1857–1893) New Walk Museum & Art Gallery, Leicester Arts and Museums Service			

Table 6-43 Sample Image specification (Wilkinson, 2018)

Image specifications include the name of the image and a reference number derived from the *Product Specification Document*. The example shown in table 6-43 above is for

the 19th century painting of the Leicester Racecourse. This image is key to the prototype as it is the only visual impression of horse racing on the park. It is subsequently used frequently throughout the product and has been used to inform much of the research into the races and the visual design of the interpretive digital media.

Name	**Welcome to Uncover-Discover Leicester Races**		**T01**
File Name	T01 Welcome text	*Asset Type*	*File Type*
		Text	MS WORD
Description			
Welcome to Uncover-discover LEICESTER RACES Have fun discovering the sights, sound and experiences of past times when Leicester's annual races were held on Victoria Park. Explore the history of the racecourse using the *'Oh that's interesting!'* map. Find out more by visiting the associated uncover-discover website. Choose what happens next by tapping on any of the buttons below			

Table 6-44 Sample Text specification (Wilkinson, 2018)

Text specifications include the name of the text and a reference number derived from the *Product Specification Document*. The example shown in table 6-44 is the welcome text which is used on screen two of the prototype app. A reference to this text asset will be on the screen asset description for S02 Welcome Screen. The text here is kept simple with an invitation to the visitor to use the prototype app to explore Victoria Park and discover the experience of attending the races in the 1800s. A concise explanation is provided as to how to use the navigation buttons.

Name	**Attraction Sound POI01 'Staffordshire Girl'**		**A01**
File Name	A01 Attraction Sound POI01 Staffordshire Girl	*Asset Type*	*File Type*
		Audio	Wav file
Description	This sound is used to attract the visitor to the Point of Interest 1 location. It is the sound of a police whistle which relates to the key part of this POI which is pickpocketing and general petty crime.		
Operation	Triggered by button: B10 Point of Interest Location 01		

Table 6-45 Sample Recording specification (Wilkinson, 2018)

Recording specifications for sound files include the name of the recording and a reference number derived from the *Product Specification Document*. The example shown in table 6-45 above is the attraction sound used for the first Point of Interest (POI), 'Staffordshire Girl'. The sound and the operational functionality are described.

Name	POI01 Animation 'Staffordshire Girl'		V01
File Name	V01 POI01 Staffordshire Girl Video Full	Asset Type	File Type
		Video	AVI File
Description	This is the story of Elizabeth Hipwell and John Jones, two characters who were found guilty of pickpocketing and theft during the races and subsequently imprisoned in Leicester Gaol.		
Operation	Triggered on screen: S30 POI01 Animation 'Staffordshire Girl'		
Supporting Assets (see Asset Pack for full details)			
Ref	Name	Type	File-name
SB01	Animation POI01 'Staffordshire Girl'	Storyboard	SB01 POI01 Video Storyboard Staffordshire Girl
SC01	Animation POI01 'Staffordshire Girl'	Script	SC01 POI01 Video Script Staffordshire Girl
APV01	Source Video POI01 Staffordshire Girl	Video	POI01 Staffordshire Girl Video
APN01	Source Audio POI01 Staffordshire Girl	Sound	POI01 Staffordshire Girl Audio
API01	Racing Horses	Image	API01 POI01 Racing Horses
API02	Petty Session	Image	API02 POI01 Petty Session
API03	Female pickpocket	Image	API03 POI01 Female pickpocket
API04	Alderman	Image	API04 POI01 Alderman
API05	Groom	Image	API05 POI01 Groom
API06	Black Horse	Image	API06 POI01 Black Horse
API07	Inside pub	Image	API07 POI01 Inside pub
API08	Policeman	Image	API08 POI01 Policeman
API09	Court Book	Image	API09 POI01 Court Book
API10	Handkerchief	Image	API10 POI01 Handkerchief
API11	Pen Knife	Image	API11 POI01 Pen Knife
API12	Prison Flywheel	Image	API12 POI01 Prison Flywheel
APS01	Ambient Court	Sound	APS01 Ambient Court
APS02	Men talking loud	Sound	APS02 Men talking loud
APS03	Men talking pub	Sound	APS03 Men talking loud
APS04	Police whistle	Sound	APS04 Police whistle

Table 6-46 Sample Video specification (Wilkinson, 2018)

Video specifications include the name of the video and a reference number derived from the *Product Specification Document*. The example shown in table 6-46 above is the video for the first POI, 'Staffordshire Girl'. The specification explains the operational functionality of this video and contains details of each of the supporting assets which will be used to create the video. This video is displayed on screen S30 POI01 Animation 'Staffordshire Girl' and is triggered by the visitor by the embedded video control buttons automatically created by Microsoft PowerPoint. Details of the story board, script, sound

and image files are listed. Asset Packs containing full descriptions of each supporting asset were created for complex assets such as videos.

Functionality for the mock-up prototype was limited to controls which would enable the visitor to navigate through the app and trigger content such as videos and sound clips. The complete *functionality plan* is available in Appendix 6A, a sample of which is provided in figure 6-63 below.

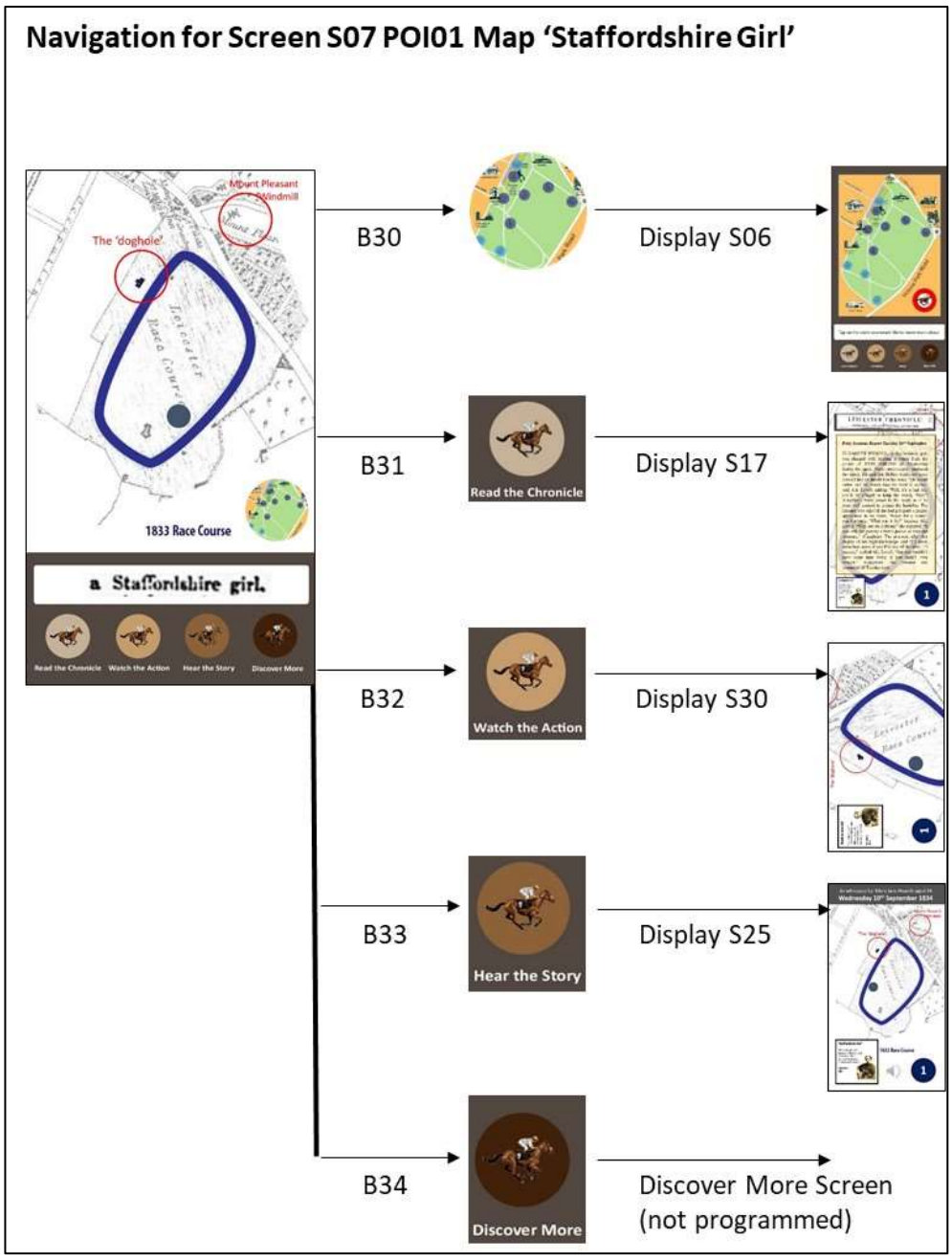
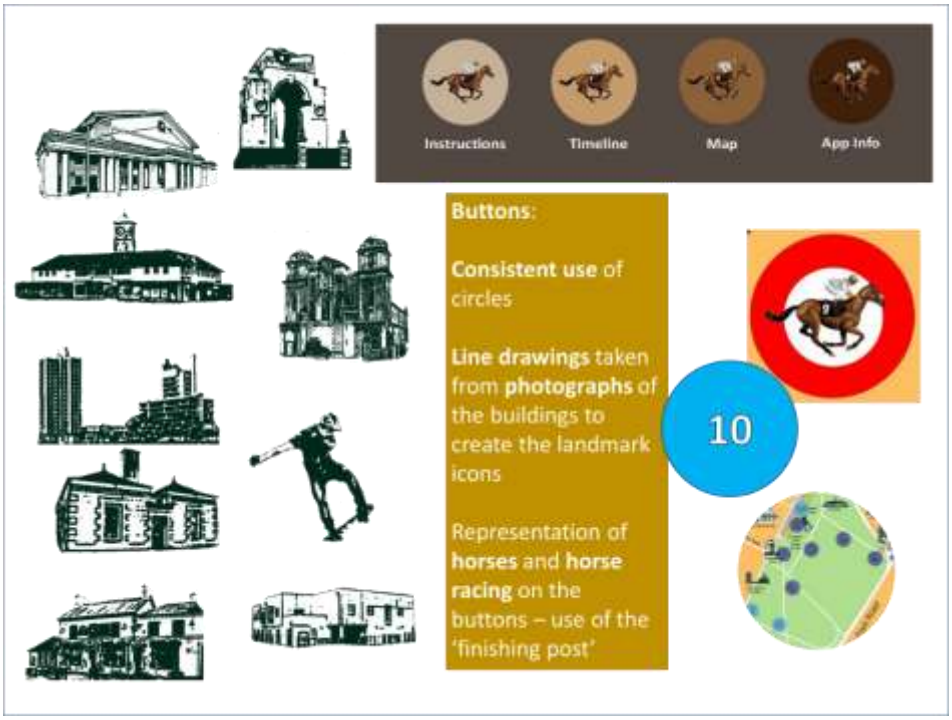


Figure 6-23 Sample Functionality Plan (Wilkinson, 2018)

6.4.3 Process 3.2 Activity 2 establish the product design theme

A mood board for was created for the overall look and feel of the interpretive digital media, figure 6-24 below.



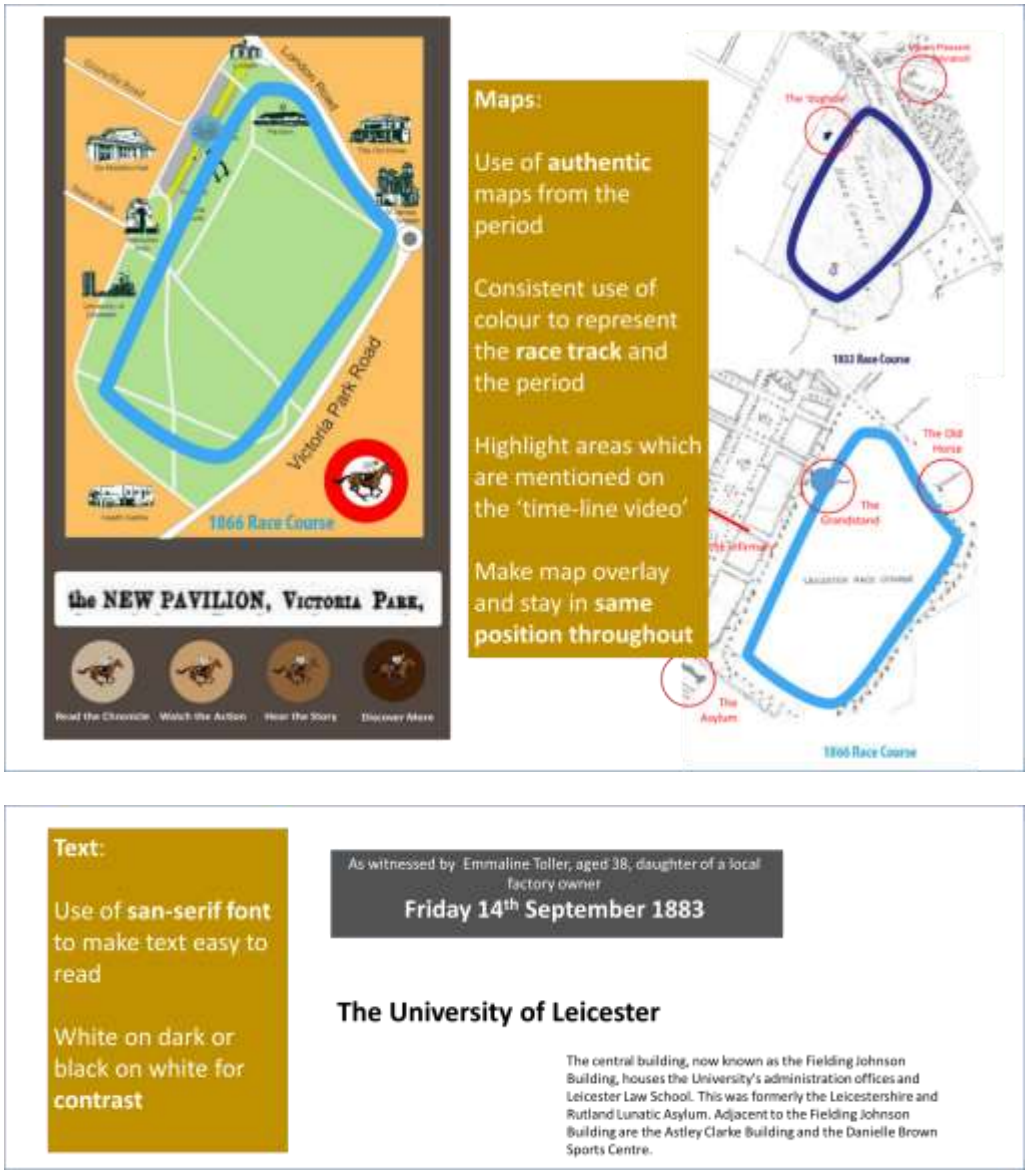


Figure 6-24 Victoria Park Mood board (Wilkinson, 2018)

The ability of the prototype to help the visitor understand the period of the races correctly, to visualise and feel what it might have been like to attend the races is central to the design theme. Authentic and accurate historical content is vital. The visual theme and colour palette of browns, oranges and greens of the product echo the Herberte painting of Leicester races (Herberte, 1874). Races were held in September which also connected with these autumnal tones. Images of horse racing was essential in facilitating visualisation. To maintain coherence with both the Herberte painting and the period of the horse racing 19th century paintings were used in preference to photographs. The horse racing theme was used in the buttons which included images

of horses and the 'finishing post'. Connecting the app to the landscape was achieved through the use of period maps as the underpinning graphic. The overall look of the product was kept clean though the use of simple images and limited amounts of text.

6.4.4 Process 3.3 A1 research and select source content

Using the *Asset Plan* and the *Asset Descriptions* further research was conducted to identify and select content. All identified resources were recorded and catalogued in the resources collection for potential use in the final prototype design. A full catalogue list of the resource collection for the prototype app is contained in Appendix 6D. Full details of the research task undertaken by the researcher are provided below.

Research for the Races on Victoria Park Three key resources were used to initiate research into the races on Victoria Park, academic articles by Jeremy Crump describing the races as a 'great carnival' (Crump, 1982, 1985 and 2016), writings by local historian Helen Boynton (Boynton, 2000 and 2003) and the painting 'Horse Racing on Victoria Park' (Herberte, 1874). For contextual purposes historical research was also undertaken on the Park and the general surroundings (Fielding Johnson, 1905, Ellis, 1948, Chinnery 1965, Potts, 1968, Strachan and Strachan 1776, Elliot 1979, McWhirr 1986 and 1999, Butt 2013 and Begley 2013). Contemporary newspaper articles from the Leicester Chronicle which reported the races and activities associated with the race week were used as the core source for information for the content of the prototype. Every newspaper race report in the on-line archives of British Library Newspapers (The British Newspaper Archive, n.d.) from the earliest available year, 1827, to 1883, the final year of horse racing on Victoria Park was accessed and read by the researcher from which themes and interesting stories emerged relating to the race meetings, the associated amusements and the annual holiday. Modern and historic maps of the location were also sourced providing an understanding of the racecourse in relation to the Park today (Boynton, 2000).

To meet the research requirements of this study it was felt appropriate to limit the amount of featured locations in the prototype app to five, since this would provide a sufficiently rich experience for the visitor and allow research site visits to be limited to a

reasonable length of time. Five key ideas were selected to feature in the Points of Interest (POI):

- POI 1: Staffordshire Girl;
- POI 2: Meet Me By Moonlight;
- POI 3: The Stranger;
- POI 4: Shocking Accident at the Races;
- POI 5: The New Pavilion.

An overview of the research for each of these POIs is now provided.

Research for POI 1: Staffordshire Girl: The Leicester Chronicle regularly reported on the petty crime associated with the race week with vivid descriptions of activities on the park and the people involved (The British Newspaper Archive, n.d.). Minor crimes such as gambling and pickpocketing are described and many of the people involved, including the arresting police officers, the accused and the Alderman are named, allowing for further research into each character. Accounts of the accused appearing before the Alderman in the Petty Sessions immediately after the race week provide a further level of detail about these incidents. Petty Sessions proceedings are reported in substantial detail, often with dialogue between the Alderman and the accused reported as a conversation, bringing colour and texture to the story. Colourful accounts of gambling and popular con tricks such as 'thimble rigging' and 'prick the garter' are also described in the Leicester Chronicle. (The British Newspaper Archive, n.d.). Terms relating to con tricks, such as 'thimble rigging were also explored further for clarification (Green, 2011).

In 1834 the Leicester Chronicle reports the arrest, by a street-keeper called Ward, of a 24 year old woman called Elizabeth Hipwell from Staffordshire for stealing a gentleman's watch. The gentleman was named John Shilton and he came from Thurmaston. Shilton's lack of appearance to present evidence to the Petty Sessions results in Hipwell being remanded twice and spending a further three months in Leicester goal before she is eventually convicted of the crime and sentenced to twelve months hard labour. Reported dialogue from the court session between Hipwell and Alderman Lovell

suggests that she is both feisty and intelligent resulting in her selection as the inspiration for the main character in the first POI story (Leicester Chronicle, 1834a,b and c). Other characters recorded in the Petty Sessions report include Mary Jane Howell, also accused of stealing a watch, and John Jones, a young man 'dressed in the garb of a groom' who is accused of being 'reputed thief' (Leicester Chronicle, 1834a,b and c). The England and Wales Criminal Register 1791-1892 for Leicester confirm the final outcomes for Elizabeth Hipwell and Mary Jane Howell (Ancestry n.d.).

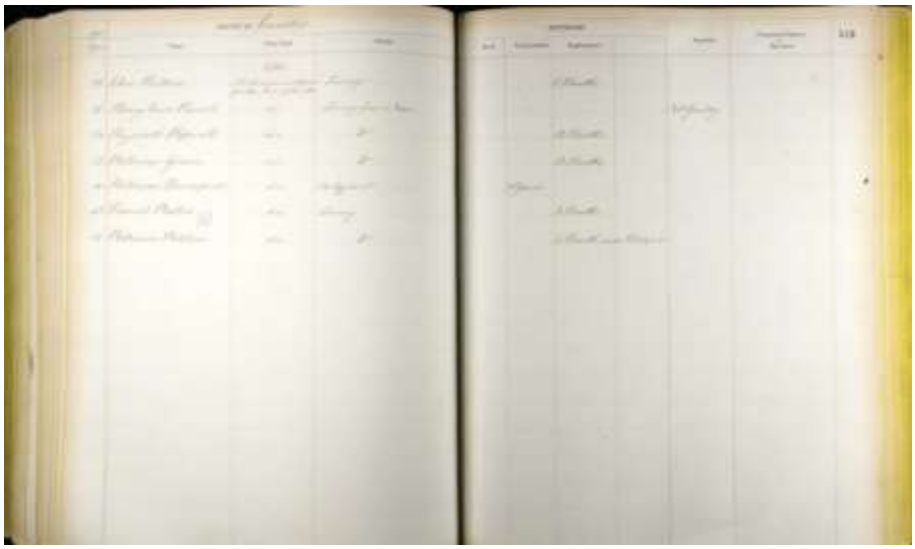


Figure 6-25 The England and Wales Criminal Register 1791-1892 for Leicester Gaol (Ancestry, n.d.)

To understand the elements of this story more fully further research was conducted into the nature and role of policing in the 1830s, the operation of Petty Sessions in the 19th century and the nature of minor crime such as pickpocketing (Beazley, 2015). Locations referred to in the sources articles such as Leicester goal, and the Black Horse pub were also investigated. Census records and criminal records relating to those involved in the story were collated using the Ancestry website, figure 6-25 Page 6-296.

Research for POI 2: Staffordshire Girl: Reports of the Race Meetings in the Leicester Chronicle make regular comment on attendance at the races. Early reports from the 1830s contain lists of the gentry in the grandstand, which fluctuates in number year on year. The presence, or otherwise, of the Duke of Rutland is always remarked upon. Leicester Races were affectionately known as the 'friendly' races and considered unique in their ability to attract both gentry and the working classes (Crump, 1982, 1985 and

2016). Amusements for the lower classes were plentiful with large numbers of publican booths temporarily erected representing the beer houses of Leicester. Race meetings were accompanied by a variety of travelling shows such as Punch and Judy, theatrical peep shows and attractions such as 'three throws a penny' and the ubiquitous coconut shies (Leicester Chronicle, 1837 and 1838). Early reports contain descriptions of archery contests and, as the century progress, shooting galleries with rifles become more prevalent. These amusements and attendance feature in the second POI 'Meet Me by Moonlight'.

Race Reports of the 1830s contain good descriptions of the amusements and the annual fair and so further investigation was undertaken to understand the nature of this entertainment. Music, both written and recorded was researched and located for the song, 'Meet me by Moonlight Alone' (Leicester Chronicle, 1837, Wade, 1830 and Bothe and Croton, 2006), and background information was discovered on the artist Madame Elizabeth Vestry. Research was conducted to learn more about the various members of the gentry reported as being in the grandstands, particularly the Duke of Rutland, Lord Howe and Mr Wolston Dixie (Doyle, 1832), and into the amusements and attractions such as the theatrical peep shows and the game of 'three throws a penny'. One of the peep shows was reported as featuring the murder of a travelling salesman, Mr Paas, in Leicester by local man Mr Cook. Not only does this story have local interest but is also notorious for being the last case of a murderer's body being gibbeted for public display. Research was also undertaken in to the murder of Mr Paas since this had national notoriety in the late 1830s (James Cook, n.d.)

Research for POI 3: The Stranger: One of the saddest tales found in the Leicester Chronicle race reports is that of the unfortunate death of Richard May, a young boy, of ten years of age (Leicester Chronicle, 1842 a and b). Richard was brought to the races by his father. The Chronicle tells us that Richard didn't particularly want to go but had no choice as his mother, from Kirby Muxloe, was not living with his father which apparently resulted in Richard attending the races. According to the newspaper report Richard was sitting a short way from the archery targets when he was hit in the eye by a stray arrow

from the archery stalls. Despite being taken first to the Asylum and then to the Infirmary the wound was fatal. His mother 'hurries' to the Infirmary but by the time she arrives he is dead. The Chronicle contains an account of the inquest held two weeks later during which a local man, Samuel Lewin, is accused of firing the fatal arrow (Leicester Chronicle,1842b). Several witnesses address the inquest one of whom confirms that it was not Mr Lewin who shot the fatal arrow but a stranger in a frock coat who disappeared into the crowd. Samuel Lewin is found innocent, saved by the fact that he was left handed – a fact noted by the witness stating that this is how was able to be certain which man shot the arrow. This story raises a number of interesting questions. Why was Richard really on the park? Where was his father at the time of the incident? How did his mother get to Leicester so quickly and who was the man in the frock coat? These question, and others, make this an interesting tale and consequently the third POI features this story. To avoid being overly macabre the focus of the stories is on the mystery of the stranger in the frock coat, rather than the death of the child.

Further research was conducted the Asylum, (Orme and Brock, 1987) the conduct and operation of inquests (which were typically held in public houses) and the appearance of frock coats. Census records were found for the Lewin brothers who lived in Conduit Street Leicester to establish more about their characters. A painting of an archery meeting at Bradgate Park, contemporary to the time of this story, provided guidance help in establishing some of the detail of this story (Ferneley, 1850).

Research for POI 7 Shocking Accident: Ann Hubbard is the only person to have died as a result of a racing incident (Boynton, 2000). In 1863 Ann went to the races with her husband. She had never been before and being somewhat hard of hearing and perhaps because she was 71 years old she appears to have got confused and tried to cross the race track just as the horses were approaching. Despite being trampled on by five of the horses she managed to get up and even speak to her husband. He put her on a cart and took her to the Infirmary where she died of her injuries later that evening. Both the Leicester Chronicle and the Leicester Mercury carry reports of the inquest into her death with full gory details of the medical examination by the Frederick Rodgers, house

surgeon at the Leicester Infirmary (Leicester Chronicle, 1863 a and b). The importance of this story and the fact that it can be located to a specific part of the race track makes this an obvious one to feature as one of the Points of Interest. Further research was conducted into the surgeon and the other characters who were at the inquest and census records were found for Ann and her husband (Ancestry, n.d. and Head, 1961),.

Research for POI 10 The New Pavilion: In 1864 a New Pavilion was opened replacing the old grandstand which had been referred to for years as 'the doghole'. The Pavilion was a sizable building and would have dominated the northern corner of the park (Boynton, 2000). The Chronicle contains a number of references to the Pavilion and there are a substantial amount of images of the building both before and after the relocation of the races to Oadby. The Pavilion also features in the Herberte painting (Herberte, 1874) and was clearly an important part of the race meeting. To enhance the story with some human interest this POI features the final day of the races in 1883 when the townspeople organised a protest meeting directly below the balconies of the building to debate the future of the races. This event is documented in the Chronicle and also by the Baptist minister, Revd Mayer, who attempted, in vain, to address the crowds that had gathered (Leicester Chronicle, 1883).

In addition to the articles sourced from the Leicester Chronicle further research was conducted into Revd Mayer (Rimmington, 1977) and the usage of the Pavilion post 1883, including the final fate of the building when it was finally demolished after extensive damage resulting from bomb damage during WW2 (Leicester Blitz Souvenir Brochure, n.d., The Victorian Society, 2011, Boynton, 2000 and Begley, 2013).

Research on Maps: A key resource used to build a picture of the race and to link it directly to modern day Victoria Park were historical and contemporary maps. The researcher resourced maps from 1800 to modern day (Boynton, 2000). Using Adobe Illustrator the researcher was able match and overlay each of the maps and to track the changes in the area over time. Three versions of the racecourse were identified each of which was incorporated into the design and used understand where the race track had

been and how it changed. The full map collection is available in Appendix 6D and a summary of the images is in table 6-47 below.

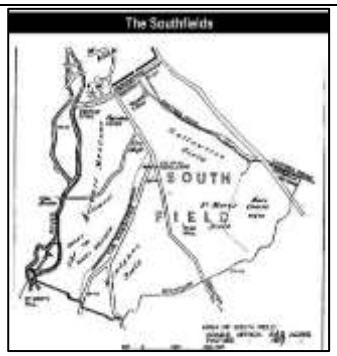
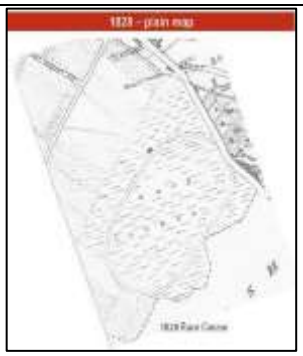
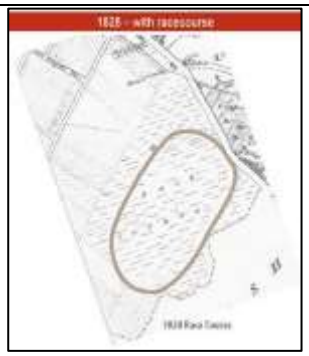
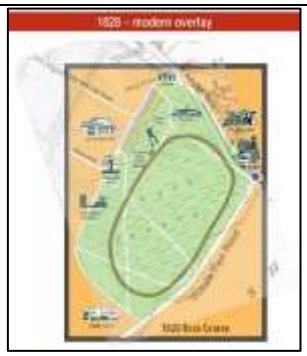
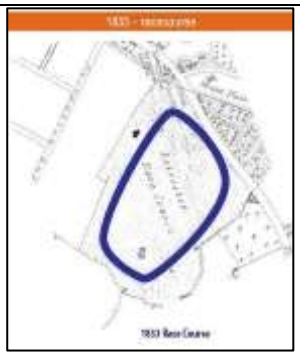
Maps created for the Prototype Products		
		
		
		

Table 6-47 Map collection (Wilkinson, 2018)

6.4.5 Process 3.3 A2 create assets

Two tasks are required to create each final asset: creation of the any contributing assets, such as scripts and storyboards and the creation of the final asset. A description is provided here of the operations undertaken by the researcher to create the assets.

Two different types of contributor assets were required for the prototype product: scripts and storyboards. Examples of both are now provided.

Scripts: A total of six scripts were written by researcher for animations, five for POIs and one for the timeline. Scripts were designed to relate information from the Leicester Chronicle about each POI and the Timeline animations in an interesting and attractive way. Text from the scripts were displayed as part of the animation. The scripts for the Points of Interest were also read and audio recorded by the researcher to provide an audio narration for each animation. All POI animations were limited to less than five minutes, as this was felt to be the maximum amount of time a visitor would wish to watch a video on location and scripts were written to support this. An example of the script used for the first POI, Staffordshire Girl is provided here figure 6-26 below. A full set of scripts is available in Appendix 6D.

When the Leicester Races were held on Victoria Park the Leicester Chronicle regularly reported on the activities of the 'light-fingered gentry', pickpockets and the like. In the 19th century minor crimes, such as theft, were dealt with in courts called Petty Sessions, where the accused and their prosecutors would appear before an Alderman. Reports from the Petty Sessions following the Leicester race week frequently contained accounts of those reprimanded at the races. Here's a flavour from 1834 featuring court reports on the antics of two such characters, Elizabeth Hipwell and John Jones. Both of these cases were brought before Alderman Lovell.

Described as "a girl from Staffordshire" Elizabeth Hipwell was accused of stealing a watch from the pocket of John Shilton, a man from Thurmaston, during the Leicester Races. Mr Ward, a street keeper what we would now call a policeman, apprehended Elizabeth. At the court hearing he produced the stolen watch, showing it to the Alderman and the court, explaining that Shilton would not come forward lest he should loose work. Alderman Lovell didn't appear too impressed by this, 'He would rather lose his watch than his work it seems. Well, it's a bad job: you'll be obliged to keep the watch, Ward." This caused much laughter and Mr Ward joined in the laugh as if he were well content to endure the hardship. Alderman Lovell asked Elizabeth Hipwell if she had ever made a former appearance in the room. "Never for a felony" she replied. "What was it for?" inquired Alderman Lovell. "Why, not for a felony, it was only for picking a man's pocket of four and sixpence." At this there was more laugher, and, after this display of her legal knowledge, she went on to say, "I'll never come here again, if you'll let me off this time." "I suspect, that you wouldn't have come here today if you hadn't been brought."

Replied the Alderman. Again there was much laughter and, in the absence of her prosecutor Mr Shilton she was remanded until the following Tuesday. She duly re-appeared on the 23rd of September and was again remanded as Mr Shilton was not present and a warrant was issued to secure his attendance. Mr Shilton, or Shelton as his name now appears in the Chronicle, was eventually tracked down and he gave evidence at the Borough Sessions in October to the mayor, recorder and magistrates. The court heard how the accused had met Mr Shelton in the Black Lion and stolen his watch and money. She was searched by Mr Ward, the policemen who found both the watch and money on her person. Cheeky to the last she had apparently offered to give the watch to the Mr Ward, in exchange for being let go! Elizabeth was found guilty and charged with 12 months hard labour, which she presumably served in the Leicester Borough Gaol on High Cross Street.

Continued on next page

Continued from previous page

Our second character is John Jones, from Gloucester. Dressed in the garb of a groom Jones was accused of attempting to pick pockets. Witnesses at the race course saw Jones attempting to cut a hole in a gentleman's pocket with a pen knife. They grabbed his wrist to stop him, at which point his accomplice ran off. The witnesses searched Jones and, despite finding only a handkerchief he was arrested by Constable Richards. The penknife in question was shown to the court – it had been ground to a fine, sharp point. Despite his protestations that he had come to the races to obtain a job as a stable boy it was clear that Alderman Lovell was having none of it! "What were you doing with an open knife in your hand?" inquired Alderman Lovell. "Cutting my nails," replied the prisoner. "Do you generally cut your nails on the race-course?" the Alderman further inquired. "Not always," was the answer. "No…."rejoined Alderman Lovell. "I suspect that you cut them at Fairs as well as Races." Laughter from the courtroom ensued. "But,", "we'll spoil your trade at Michaelmas Fair, and so save the farmers from one risk of having their pockets picked" added the Alderman. The prisoner was then sentenced, as a reputed thief, to be imprisoned for **three months of hard labour in the County House of Correction**. Before being removed, he claimed and received his handkerchief. Very likely Jones ended up on the infamous treadmill at the Borough Prison on High Cross Street.

Figure 6-26 Sample animation script (Wilkinson, 2018)

Narrated stories for the POIs were also scripted by the researcher. In each case the story was told in the first person in the form of a witness account of someone who was at the races. Since all stories were narrated by the researcher each character was, by necessity female, although it would have been preferable to use different voices for recordings and to have been able to include male characters. Each narration character was given a name and an occupation appropriate for their part in the story, for example, one of the characters is a female ballad-monger, singing to the crowds and so able to witness all the amusements from the point of view of being in the middle of the fair, whereas the woman who witnesses the final day of the races is the daughter of a local industrialist and subsequently can afford to witness the action from the ladies' balcony of the Pavilion. Stories were intended to be listened to by visitors as they commute across the park and are subsequently about five minutes long, the average time it takes to walk across the Park. An example of the narrated story scripts for POI Staffordshire Girl is in figure 6-27 below.

"Thimble Riggers and Pick Pockets", as witnessed by Mary Jane Howell, aged 24,
Leicester Races, Wednesday 10th September 1843.

Psst – over here! I know you're enjoying the Duke's race, but come with me and I'll show you round the race course, who to trust and who to avoid. If you're not careful you can get yourself caught up in all manner of wrong doings up here during the races. Oh I know there's plenty of townsfolk who are just here to have a good time, lots of jockeys, and honourable gentleman too – but it's those light fingered gentry and the like you need to be wary of – so let me show you where they are likely to be lurking.

Look in here, in this publican's booth. This one's run by the owner of the Crown. It's a good hostelry – nothing against it, but when men come in here to have a drink or two it could be more than their wits that they loose and more than their beer money they part with. Once they've had a drink or two they get dim eyed and slow witted – take a look at that gentleman over there, that's right, the one who's standing next to the bar in the tan coloured coat, he's got his back to us. Now take a good look at that lad just to his left – he' dressed in the garb of a groom, but I very much doubt he knows one end a saddle from another, let alone a horse. Look again at our man in the tan coat – what's that other chap doing leaning on his shoulder – I'll wager that he's in league with our pretend groom – yes, just as I thought see that lad's hand go into the gentleman's pocket – so quick – and again – the other pocket on the other side this time. Thing is – like I said – after a drink or two your senses are a bit numb, so that gentleman' got no idea what's going on. Mind up – what's our 'pretend groom doing now' – ah yes – he thinks there's something in that pocket – but rather than risk slipping it out with his fingers he's going to take a knife to the coat – look see – he's got a penknife now, pressed right up against that pocket seam. Ooohhh that'll do for him, there's a couple of other blokes like us have seen what's going on and their having none of it – they've grabbed out groom by the wrist and got that penknife of off him – oh yes – and his mate's run off. All very suspicious. Oh look, here comes Constable Richards, I wonder what he's going to make of all this. He's going to make that young lad turn out his pockets – see if he can find anything, I be he doesn't…there see…nothing 'cept an handkerchief'. He's got away with it this time like as not – oh no, our Constable friend has decided our groom's not to be trusted. He's keeping the knife and arrested our groom – well, there's turn up!

Wooho – look outside at that chap running over the grass away out from the back of Mr Brigg's publican booth! I don't think Mr Briggs'll be too pleased when he learns that that character has absconded with some of his jugs and glasses.

Do you want to see how some of our other delinquents get folks to part with their hard earned pennies? Come with me. I'll show you the thimble riggers…You need to be very wary of these gentleman. See how they've got everything set up on little tables, that's so they can close everything down quick and scarper when they see the Peelers coming. What do you mean you don't know what a thimble rigger is – you really do need an education don't you! So this is how it works. Our old friend the timblerigger is always going to try and swindle you out of your money – and they are very adept at it too. Watch this one – he's got his little table that he's set up, three thimbles and a pea. First he shows you the pea and then he hides it under one of them thimbles, then he moves all the thimbles round, quick as anything, and all you've got to do is guess which thimble's got the pea under it. Cause it seems so simple – and you think you've managed to follow that pea round as he's moved the thimbles, you say to yourself its easy – and cause you reckon you know where that pea is you take on the bet – only to find that the pea's always under a different thimble – oh trust me –thimbleriggers are agile and good at their trade – you'll more than likely never win! Oh – look now this one's about to get his comeuppance – Constable Richards is on his way over. See how quick that table collapses? Oh – that's clever – he's passed the table on to his accomplices and Richards hasn't seen that. Even if he apprehends him now he won't be able to prove anything without getting the thimbles too!

There's another trick you need to be careful of too – prick the garter. I bet you've not heard of that one neither – thought not! What they do is they get a garter or a piece of list, double it up then fold it tight – then they ask a punter to bet that they can prick the garter with a pin at the point at which it is doubled. Once you've put your pin in then they unfold the garter and, nine times out of ten, the you find out you've been deceived and that you have only pricked one of the false folds – the bet is lost and our light fingered gentry have made another profit! If they see the Peelers they simply drop the garter and run off. Simple eh!

Now what's that gentleman over there doing? Constable Richards seem to be apprehending him – can you hear what they're saying. Ohhh look –the Constable's found half a dozen pewter spoons on his person…and that chaps trying to convince him he's a vendor of spoons - very likely – I don't think! Like as not he can't produce a licence to support his claim! Bother – I thought it might rain – it's not been the best of weather for the races this year. Let's go back to the publican tent…

Ah that's better – out of the rain – oh an look, another trick to watch out for. Beware the attentive young lady. Look at that one over there, showing such a lot of interest in that gentleman's pocket watch, 'Oh it's so handsome' honestly – how gullible do you have to be to be taken in by such obvious flattery – she'll have that watch off him and in her pocket quick as anything, and he's too daft to see it happen!

Continued on next page

Continued from previous page

Look out – here comes Mr Ward, one of our other Street Keepers. He looks like he's after someone. That gentleman with him looks a bit tipsy – I wonder how long he's been in the ale tent! Oh yes – he's pointing at our young girl over there and now Mr Ward's going over to ask her a few questions. Say's she doesn't know the gentleman with Mr Ward at all – oh Ward says he's going to search her – oh and what a surprise - some money and a watch belonging to the tipsy gentleman – ha ha she's told Mr Ward he can keep the watch if he lets her go! Worth a try I suppose – but he's having none of it. My guess is that she'll be spending Michaelmas in our County Gaol!

So there you go - -just a few of the ways in which our light fingered folk will get things off you which you don't want to give away. You'll be fine now you know the tricks - keep safe now and enjoy the rest of your day at the races. It's the Belvoir Stakes next – perhaps you should put your money on Mr Whatoff's horse 'Enchantress!

Figure 6-27 Sample story script (Wilkinson, 2018)

Storyboards: were created to support the planning and creation of each of the six animations. All assets required for each animation were mapped onto the storyboard allowing the researcher to plan timings, images, narration and script information. An example of the storyboard for the POI, Staffordshire Girl is shown in table 6-48 below. Full details of all the storyboards are in Appendix 6D.

Time	*Narration*	*Image*
0.00	When the Leicester Races were held on Victoria Park the Leicester Chronicle regularly reported	 *API01*
0.06	on the activities of the 'light-fingered gentry', pickpockets and the like	
0.11	In the 19th century minor crimes, such as theft, were dealt with in courts called Petty Sessions	 API02
0.16	where the accused and their prosecutors would appear before an Alderman	
0.20	Reports from the Petty Sessions following the Leicester race week frequently contained accounts of those reprimanded at the races	
0.28	Here's a flavour from 1834 featuring court reports on the antics of two such characters, Elizabeth Hipwell and John Jones	 API03/API04/API05
0.36	Both of these cases were brought before Alderman Lovell	
0.41	Described as "a girl from Staffordshire" Elizabeth Hipwell was accused of stealing a watch	
0.46	from the pocket of John Shilton, a man from Thurmaston, during the Leicester Races	
0.51	Mr Ward, a street keeper what we would now call a policeman, apprehended Elizabeth	

0.56	At the court hearing he produced the stolen watch, showing it to the Alderman and the court	 API03
1.02	explaining that Shilton would not come forward lest he should loose work. Alderman Lovell didn't appear to impressed by this	
1.11	'He would rather lose his watch than his work it seems. Well, it's a bad job: you'll be obliged to keep the watch, Ward."	 API04
1.19	This caused much laughter and Mr Ward joined in the laugh as if he were well content to endure the hardship.	
1.26	Alderman Lovell asked Elizabeth Hipwell if she had ever made a former appearance in the room.	
1.31	"Never for a felony" She replied. "What was it for?" inquired Alderman Lovell	 API03
1.38	"Why, not for a felony, it was only for picking a man's pocket of four and sixpence."	
1.42	At this there was more laugher, and, after this display of her legal knowledge, she went on to say	
1.49	"I'll never come here again, if you'll let me off this time."	
1.53	"I suspect, that you wouldn't have come here today if you hadn't been brought." Replied the Alderman	
1.59	Again there was much laughter and, in the absence of her prosecutor Mr Shilton she was remanded until the following Tuesday.	
2.05	She duly re-appeared on the 23rd of September and was again remanded as Mr Shilton was not present	
2.12	and a warrant was issued to secure his attendance	
2.15	Mr Shilton, or Shelton as his name now appears in the Chronicle, was eventually tracked down	 API02
2.23	and he gave evidence at the Borough Sessions in October to the mayor, recorder and magistrates	
2.27	The court heard how the accused had met Mr Shelton in the Black Lion and stolen his watch and money	 API06
2.35	She was searched by Mr Ward, the policemen who found both the watch and money on her person	 API07/API08
2.40	Cheeky to the last she had apparently offered to give the watch to the Mr Ward, in exchange for being let go!	
2.48	Elizabeth was found guilty and charged with 12 months hard labour	 API09
2.52	which she presumably served in the Leicester Borough Gaol on High Cross Street	
2.57	Our second character is John Jones, from Gloucester	

3.01	Dressed in the garb of a groom Jones was accused of attempting to pick pockets	 API05
3.06	Witnesses at the race course saw Jones attempting to cut a hole in a gentleman's pocket with a pen knife	 API
3.11	They grabbed his wrist to stop him, at which point his accomplice ran off	
3.17	The witnesses searched Jones and, despite finding only a handkerchief he was arrested by Constable Richards	 API14
3.25	The penknife in question was shown to the court – it had been ground to a fine, sharp point.	 API11
3.31	Despite his protestations that he had come to the races to obtain a job as a stable boy	
3.36	it was clear that Alderman Lovell was having none of it!	
3.40	"what were you doing with an open knife in your hand?" inquired Alderman Lovell. "Cutting my nails," replied the prisoner	 API04
3.50	"Do you generally cut your nails on the race-course?" the Alderman further inquired. "Not always," was the answer	 API05
3.57	"No" rejoined Alderman Lovell "I suspect that you cut them at Fairs as well as Races." Laughter from the courtroom ensued	 API04
4.07	"But" added the Alderman, "we'll spoil your trade at Michaelmas Fair, and so save the farmers from one risk of having their pockets picked."	
4.16	The prisoner was then sentenced, as a reputed thief, to be imprisoned for three months of hard labour in the County House of Correction.	 API13
4.23	Before being removed, he claimed and received his handkerchief	 API10
4.28	Very likely Jones ended up on the infamous treadmill at the Borough Prison on High Cross Street	 API12

Table 6-48 POI01 'Watch the Action' animation story board (Wilkinson, 2018)

The prototype product is comprised of the following assets: Screens, buttons, images, text, recordings and videos. Creation of each of these assets is now described, with details as to how they were made and the rationale behind each.

Screens: were created in Microsoft PowerPoint and can be divided into three main categories: landing, welcome and instruction; main map and points of interest map; points of interest and landmarks.

Landing Screen, Welcome/Instructions: The screens contain the welcome information and instructions on how to use the prototype as a guide to experiencing the race course these screens appear when the visitor first uses the product. Consistency in navigation is achieved through the inclusion of a navigation bar at the bottom of the welcome and instruction screens with display of these buttons across all screens in this category. The assets for these screens were created as individual files using Microsoft Word, Adobe Photoshop and Adobe Illustrator and imported into Microsoft PowerPoint. Buttons were programmed using hyperlinks, figure 6-28 below.

Figure 6-28 Landing/Welcome and Instruction Screens (Wilkinson, 2018)

Main Map and POI Map Screens: The underlying visual image for the prototype is the map of Victoria Park which is displayed on the Main Map Screen. When a POI is selected this map changes to one which is appropriate for the period of the POI being displayed,

for example, in the image below the map displayed is for the racecourse in 1833, as it would have been when Elizabeth Hipwell attended the races. All maps were processed in Adobe Illustrator to align each to the modern map of Victoria Park.

The Main Map Screen, figure 6-29 below, is the most complex screen in the app containing five POI buttons, nine landmark buttons, the finishing post (exit) button and the four navigation buttons in the navigation bar at the bottom of the screen. Two POI Map screens were created for each POI, one containing an information box introducing that POI, this is the map screen that the visitor first sees when they choose this POI from the Main Map, and the other showing just the map, which is the one the visitor will return to once they have been introduced to this particular POI. As with the Welcome and Introduction screens the navigation bar at the bottom of the screens provided consistent functionality. Assets for these screens were created as individual files using Microsoft Word, Adobe Photoshop and Adobe Illustrator and imported into Microsoft PowerPoint. Buttons were programmed using hyperlinks within Microsoft PowerPoint.

Figure 6-29 Main Map and POI Map Screens (Wilkinson, 2018)

POI Screens: Five sets of POI screens were created, each consisting of three screens: one for the Chronicle, one for the audio story and one for the animation, figure 6-30 p 6-309. As with previous screens the assets were created as individual files using Microsoft

Word, Adobe Photoshop, Adobe Illustrator, Adobe Premier Pro and Adobe After Effects and imported into Microsoft PowerPoint. Buttons were programmed using hyperlinks within Microsoft PowerPoint. Sound and video files are triggered programmed using hyperlink controls and the embedded content and audio controls provided by Microsoft PowerPoint were used for visitor control of the video and story assets. Figure 6-30 below is an example of the screens as they appear in the final launched prototype. User testing highlighted minor issues with the initial design resulting in minimal but significant changes to the display of these screens. See Section 6.4.11 page 6-321 for full details of these alterations. One key change was the introduction of one button to return to the POI Map, rather than using the navigation bar from the map screens.

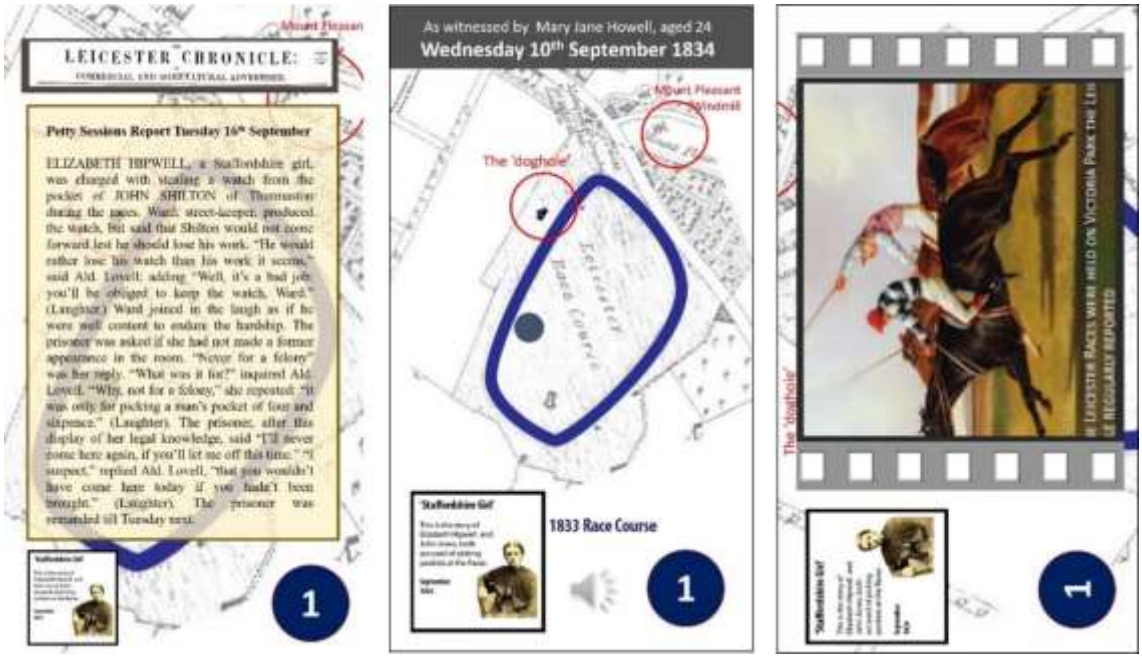


Figure 6-30 POI Screens S17 The Chronicle, S25 Narrated Story and S30 Animation (Wilkinson, 2018)

Landmark Screens: Nine sets of Landmark screens were created, figure 6-31 p 6-311, each providing additional information relating to one of the landmarks on the main map. As with previous screens the assets were created as individual files using Microsoft Word, Adobe Photoshop, Adobe Illustrator, Adobe Premier Pro and Adobe After Effects and imported into Microsoft PowerPoint. Buttons were programmed using hyperlinks within Microsoft PowerPoint. Navigation is limited to three buttons: '*return to the main map*', '*read more'* and '*go back'*.

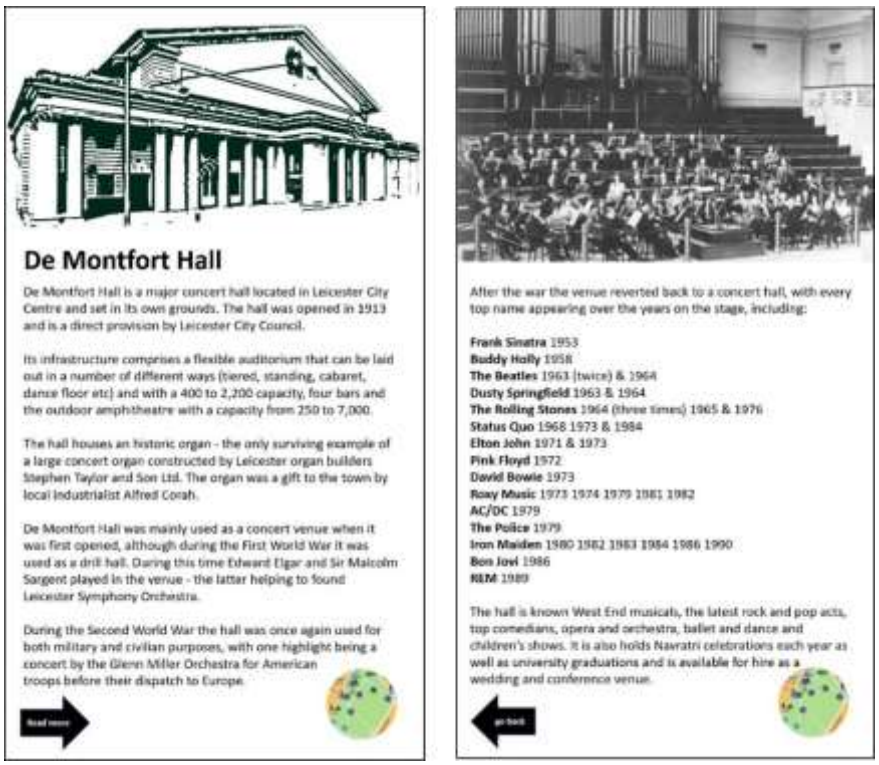


Figure 6-31 Landmark Screens: De Montfort Hall (Wilkinson 2018)

Navigation Bar Buttons – Welcome and Instruction Screens: Navigation buttons for the welcome and instruction screens were drawn in Adobe illustrator and inserted into the Microsoft PowerPoint as images. Buttons were placed in a navigation bar at the bottom of the screen to provide consistency and functionality was achieved by assigning each button with hyperlink controls, figure 6-32 below.

Figure 6-32 Navigation Bar Welcome and Instruction Screens (Wilkinson, 2018)

Navigation Bar Buttons – POI Screens: Navigation buttons for the POI screens were drawn in Adobe illustrator and inserted into the Microsoft PowerPoint as images. Buttons were placed in a navigation bar at the bottom of the screen to provide consistency and functionality was achieved by assigning each button with hyperlink controls, figure 6-33 page 6-312.

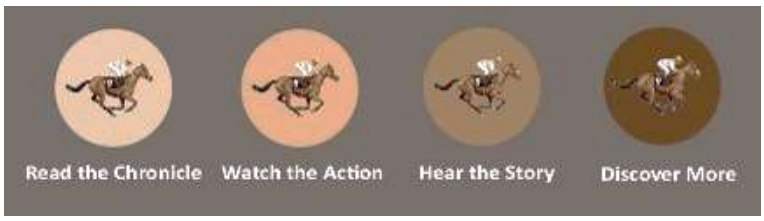


Figure 6-33 Navigation Bar POI Screens (Wilkinson, 2018)

Direction Buttons – Main Map, Read On, Go Back, Exit: Direction buttons were drawn in Adobe illustrator and inserted into the Microsoft PowerPoint as images. Buttons were designed to be simple and intuitive. Functionality was achieved by assigning each button with hyperlink controls, figure 6-34 below.

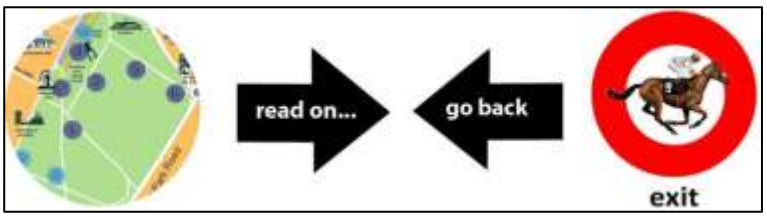


Figure 6-34 Direction Buttons Main Map, Read On, Go Back, Exit (Wilkinson, 2018)

POI Buttons and Landmark Buttons: POI and Landmark buttons were created in Adobe illustrator and Adobe Photoshop and inserted into the Microsoft PowerPoint as images. Buttons were drawn to be simple and intuitive, for example using simplified images of the landmark. POI button colours signify the period racing they relate to, dark blue being older and light blue being later. The image of the racecourse uses the same corresponding colour to achieve connection and consistency. Functionality was achieved by assigning each button with hyperlink controls, figure 6-35 below.

Figure 6-35 POI Buttons and Landmark Buttons (Wilkinson, 2018)

Images: were prepared using Adobe Photoshop and Adobe Illustrator and inserted into the Microsoft PowerPoint screens as required.

Text files: were prepared using Microsoft Word and inserted into the Microsoft PowerPoint screens as required.

Videos: Using the source content from the Leicester Chronicle race reports five versions of the story were written for presentation using animation. Stories were written and recorded by the researcher. Sound clips were added to provide atmosphere, such as crowd scenes and galloping horses. Authentic image were used to evoke horse racing and to evoke the period. A story board was created for each story. Images were prepared and edited in Adobe Photoshop. Sound files were sourced and edited in Audacity. Assets were assembled in Adobe Premiere Pro. A text version of the story was animated with the video. The final video and sound were combined and mixed using Adobe After-Effects.

Recordings: Narration text was digitally recorded by the researcher and edited using Audacity to remove errors, gaps and inconsistencies. Sound effects were sourced and the edited in Audacity to equalise recording levels and prepare them for inclusion in the app. The resulting MP3 files were imported into Adobe After Effects for further processing or inserted directly into the Microsoft PowerPoint app.

6.4.6 Process 3.3 A3 create functionality

Functionality was provided by creating the impression of user interaction and control of the product. Button images were programmed using hyperlink controls to create 'hotspots' which would react to visitors touching the screen to select and control items. Full details of the navigation and functions contained in the interactive digital media are provided in *the Functionality Plan* which can be found in Appendix 6D.

6.4.7 Creation of additional digital content

An essential element of the prototype product is the ability to support visitors' interest in seeing additional information as they require. For the purposes of this study this information was provided in the form of a mock-up of additional digital content which could be accessed by the visitor on request. This content does not form part of the prototype app and is intended to be accessed via the internet. For the purposes of this

study samples of content was made available via another mock up product and provided by the researcher, on request, throughout the study visit. Microsoft PowerPoint was used to create and deliver the content. Similar to the prototype text assets were created in Microsoft Word and image assets in a combination of Adobe Illustrator and Adobe Photoshop. Functionality including navigation is provided through programmed hyperlinks. A full description of the additional digital content is available in Appendix 6D.

Figure 6-36 Additional digital content - title screen (Wilkinson, 2018)

A sample of the additional content relating the first POI, 'Staffordshire Girl' is now described. Content in the additional digital content is divided into six sections: Interest Points; Maps; Leicester Chronicle Race Reports; Historic Images; Landmarks and Race Results. Pictured below is the title screen with touch sensitive hotspots to each of the sections.

The *Interest Points* section contains further information about topics featured in the each of the stories. Shown below, figure 6-37, is the content available for POI one, 'Staffordshire Girl'. Seven areas of additional information is available: the race report from the Leicester Chronicle, the Race Results from the Leicester Chronicle; further details on Elizabeth Hipwell, plus more content about the 'light fingered gentry, policing the races, courts and gaols in Leicester and tricks and scams of the 19th Century.

The race report and the results of the races, as reported in the Leicester Chronicle are provided for each POI in the Victoria Park prototype. Displayed here are those relating to POI One 'Staffordshire Girl'. Also shown here is the screen with more interest on the main protagonist of this story, Elizabeth Hipwell.

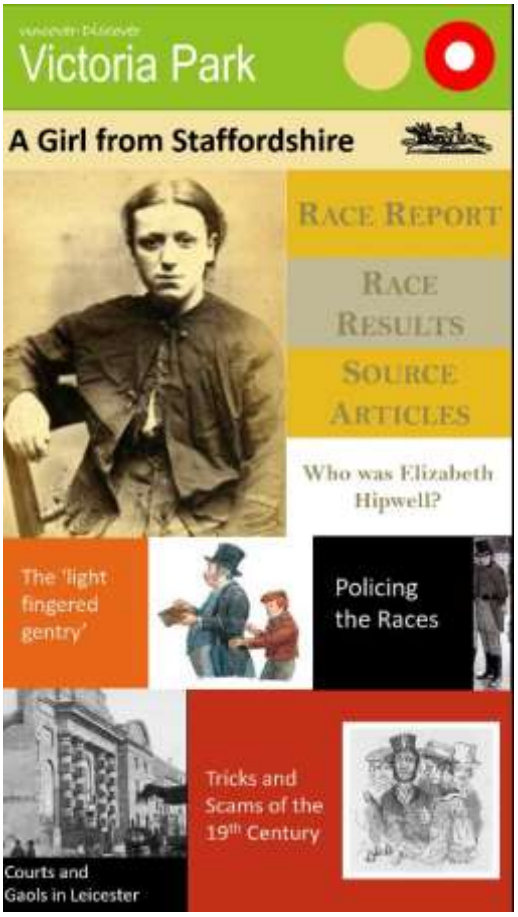


Figure 6-37 Additional digital content POI01 Staffordshire Girl (Wilkinson, 2018)

Figure 6-38 Race Report, Race Results and Elizabeth Hipwell screens (Wilkinson, 2018)

Using research gathered to inform the main prototype, additional material is created for this interest point. Shown here is the information relating to more cases of pickpocketing and minor crimes during the races, plus more details about the petty sessions held in Leicester and the Gaol.

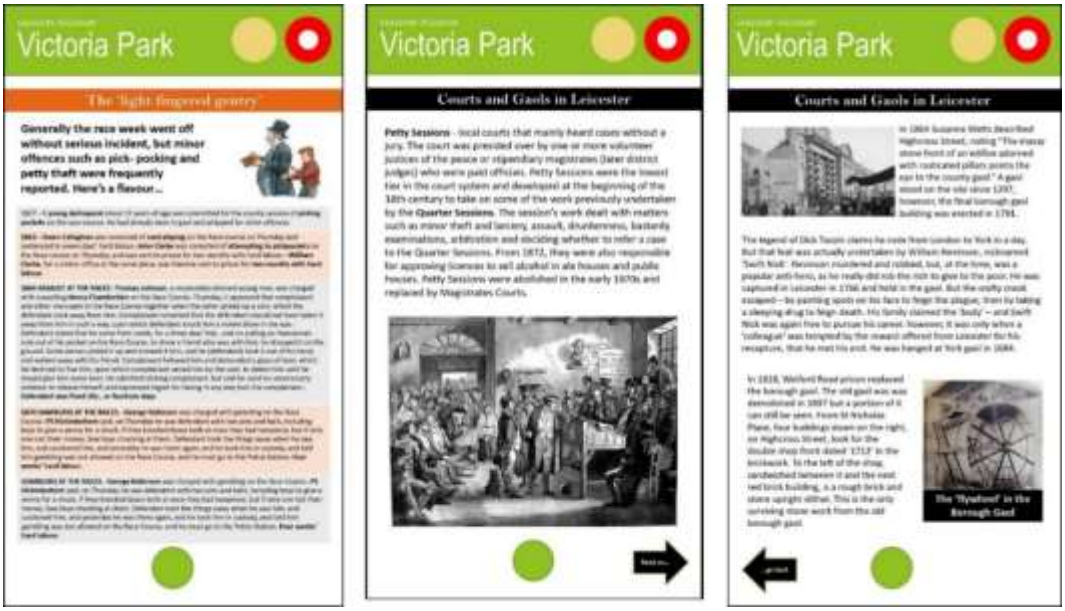


Figure 6-39 The 'light-fingered gentry' and Courts and Goals in Leicester screens (Wilkinson, 2018)

Shown here are is information relating to the policing of the races in Leicester with more details about policing in the 19th century and more crime reports from the Leicester Chronicle and background information on some of the real police who were involved.

Figure 6-40 Policing the Races (Wilkinson, 2018)

The final screen of information for this Interest Point contains further background information on typical tricks and scams which would have been practised on the racecourse during the 19th century.

Figure 6-41 Tricks and Scams (Wilkinson, 2018)

6.4.8 Process 3.4 A1 plan and design user test

A limited amount of user testing was undertaken prior to starting the full field research programme with the study participants, the purpose of which was to ensure basic but essential functionality of the prototype, and to confirm the validity of the field study research plan. A pilot site study visit was undertaken with one participant which broadly followed the planned outline for the actual field visits. The user testing broadly covered the recommended steps outlined in the Guide. A SOP was created for the pilot visit user testing, see figure 6-42 page 6-319.

Steps	Activities
1: Pre site visit meeting	The Pre site visit meeting was undertaken during which the participant was provided with information about the study and asked to complete appropriate consent form. Pre visit benchmarking of the participant's attitudes towards, history, the park and digital media was conducted using a *pre-visit questionnaire*, the *Geneva Emotion Wheel* and the *Visitor Engagement Wheel*. An overview of the site visit and a demonstration of the Victoria Park prototype and additional digital content was provided
2: Site Visit	Walk to the entrance to the park and watch the timeline video. Each of the five POIs was then visited and the participant viewed the relevant content at each location
3: Post Visit Evaluation:	After the site visit the participant completed a post visit questionnaire and re-visited the *Geneva Engagement Wheel* and the *Visitor Engagement Wheel* to indicate measures of emotion and engagement resulting from their visit to the park with the prototype. The post visit evaluation interview was also undertaken. Semi structured in format this interview asked the participant to comment on the design of the prototype itself, and

	the field study visit to enable the researcher to make appropriate adjustments prior to conducting the full programme of field tests.
Step 4 Review	On completion of the post visit evaluation the researcher assessed the results of this visit and made appropriate amendments to the prototype product and the field test standard operating procedure.

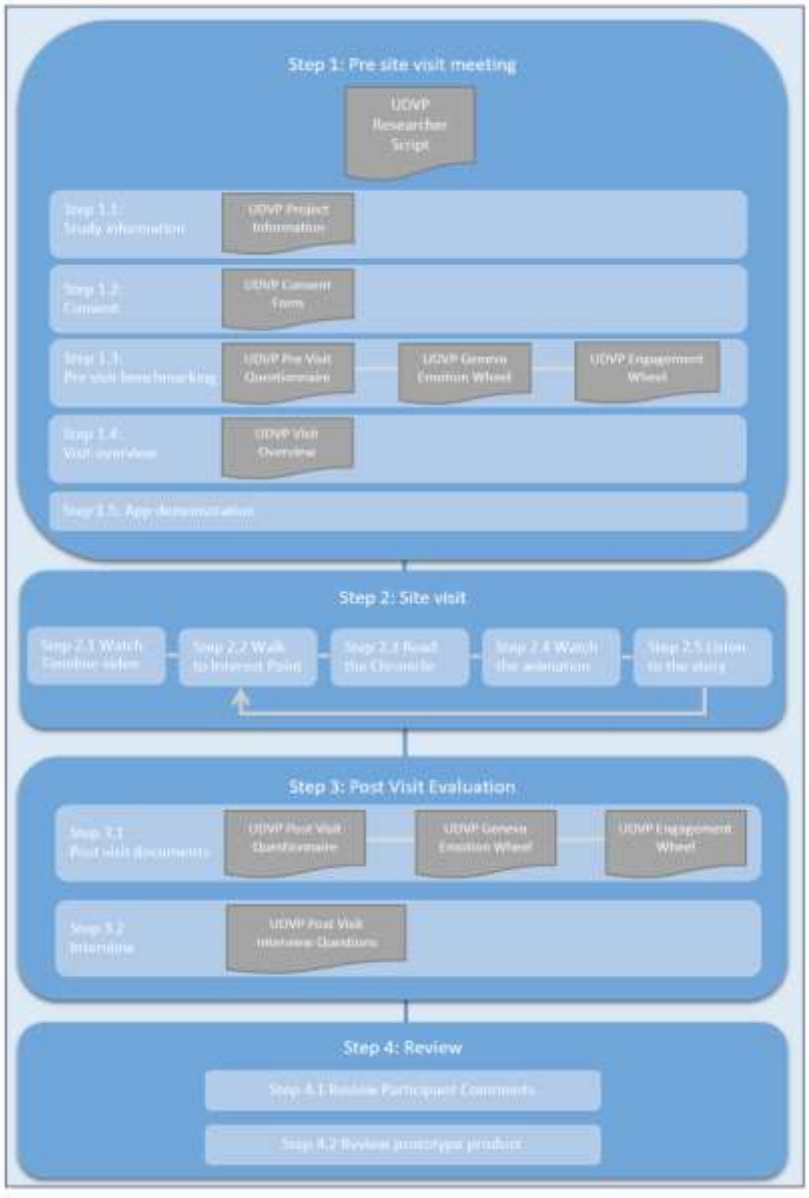


Figure 6-42 Prototype user testing SOP (Wilkinson, 2018)

User test documents were not specifically created for the user testing of the prototype product; the research participant completed the same documentation required for the actual research study. See chapter 3 Methodology for full details of this documentation.

6.4.9 Process 3.4 A2 conduct tests

The user test was conducted according to the standard operating procedure outlined above on Tuesday 29th of August 2017 at 9am and involved one person undertaking a trial run of the research study site visit with the first version of the Victoria Park prototype. The outcome of this initial field study is described in Activity 3 below.

6.4.10 Process 3.4 A3 assess test results

The following comments were made in relation to the prototype product

- The images of the original Leicester Chronicle articles were difficult to follow, because of the antiquated language and typeface of the original newspapers being blotchy and unclear.
- The navigation between the POI screens was unnecessarily complicated and the user didn't find the navigation bar useful as they could simply go back to the map screen for that POI and make their content selection from there.
- More maps were requested to help the visitor to visualise the racecourse and connect with the location.

Assessment of these comments by the researcher resulted in the following recommendations for amendments to the design:

- Replace the images of the original newspaper articles with typed versions of the reports. The benefits of making the text more readable and therefore more understandable outweighed the disadvantages of losing some original images.
- Remove the navigation bar from the POI and replace with a single button returning the visitor to the appropriate POI Map screen.

- Use the map images more frequently throughout the screens and in particular keep in the background for all the POI screens.

6.4.11 Process 3.4 A4 amend product

Following the recommendations from the findings of the user testing the following changes were made to the POI screens.

- The text from the Leicester Chronicle was retyped in Microsoft Word replacing the images from the Leicester Chronicle.
- The navigation bar was removed from the POI screens and replaced with one navigational button which took the visitor directly back to the POI Map, from where they could access any of the three POI screens associated with that POI.
- The map was continuously displayed on all POI screens to create a consistent link to the location.

The changes to the prototype are illustrated in the two sets of screens shown below, the first being the POI screens from version one of the prototype, figure 6-43 below and the second being the same POI screens, revised for the final version, figure 6-44 p 6-322.

Figure 6-43 Original Version (Wilkinson, 2018)

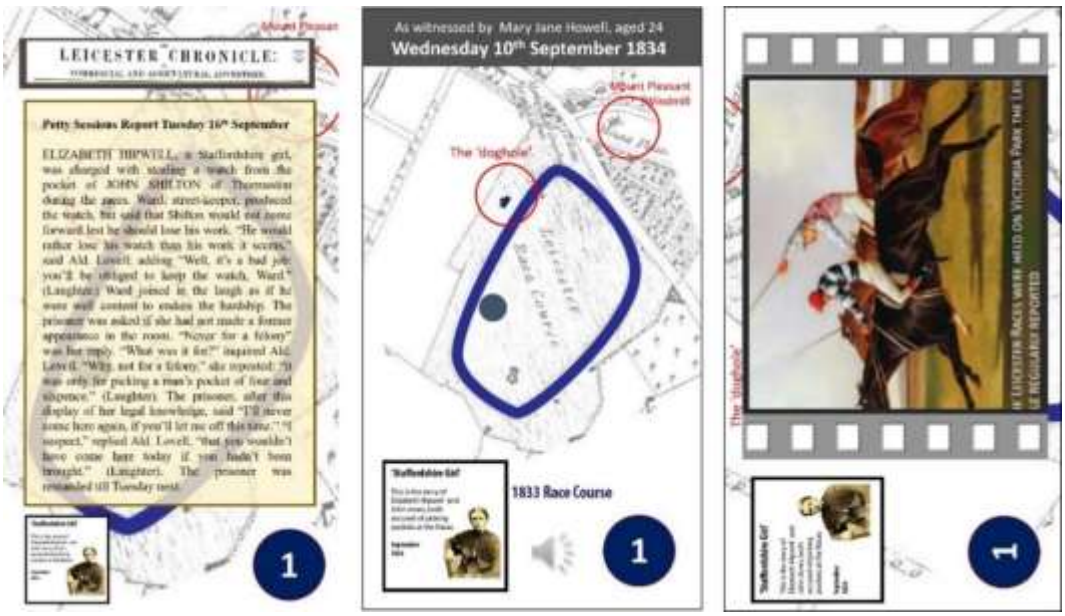


Figure 6-44 Final version (Wilkinson, 2018)

6.4.12 Process 3.5 A1 release product

The researcher confirmed that the Victoria Park prototype and the associated additional digital content was suitably tested and sufficiently ready for use in the research study site visits.

Chapter six has explained the use of guidance in designing and creating the Victoria Park prototype product and the associated additional digital content. Chapter seven will present the results of the evaluation of this prototype, the additional digital content and the subsequent evaluation of the effectiveness of the Guide.

7 Chapter Seven: Results of the Victoria Park Evaluation

7.1 Introduction

This chapter addresses research objective 5 of this thesis, as outlined in section 1.3.2, page 1-12. It describes the evaluation of the prototype Victoria Park product addressing research questions 9 – 11 as outlined in section 1.3.3, page 1-13. Full details of the methodology for this evaluation are provided in chapter three (page X).

7.1.1 Aims and objectives

The aim of this evaluation was to ascertain three things: the capacity for interpretive digital media to facilitate and support the engagement of the visitor with the cultural heritage (research question 9); the effectiveness of the Guide (research question 10); and the impact of location-based digital experience (research question 11).

To explore these issues the following questions were explored. These three issues map directly to research questions 9, 10 and 11 as described in section 1.3.3, page 13:

- **Engagement**: To what extent have participants experienced an increase in their engagement with the cultural heritage across the *stages* and *states* of the engagement framework? In what ways has the participants' relationship with the park been transformed? (research question 9)

- **The Guide**: To what extent do the design decisions regarding features, content and presentation, as recommended by the Guide and implemented by the researcher, contribute to visitor engagement? To what extent has the prototype equalled or improved on the performance of the apps studied in the Mobile Apps study? (research question 10)

- **Being there**: To what extent does being on location with the interpretive digital media add value to the engagement experience? (research question 11)

7.1.2 Field test information

Field tests were conducted in September and early October 2017, a period which coincided with the time of year that the Leicester Races would have occurred in the 19th century, adding to the authenticity of the experience of visiting Victoria Park in the autumn. A total of 14 visits were undertaken with 19 visitors (table 7-1 below).

Field Test Schedule			
Date	Morning 9.00-13.00	Afternoon 13.30-17.30	Evening 18.00-22.00
Tuesday 29 August*			
Friday 1 September			
Saturday 2 September			
Sunday 3 September			
Friday 8 September			
Monday 11			
Tuesday 12 September			
Wednesday 13 September			
Friday 15 September			
Tuesday 19 September			
Friday 22 September			
Sunday 24 September			
Friday 29 September			
Sunday 1 October			
*	pilot visit/user testing		
	One participant per visit		
	Two participants per visit		

Table 7-1 Visit schedule (Wilkinson, 2018)

The weather was typically autumnal, generally fine though often cold and one visit was marred with some significant rain. With the exception of one participant who arrived late all visitors experienced all five Points of Interest (POIs) and completed the whole visit. Site visits typically lasted between one and a half to two hours; the duration dictated by the visitor, not the researcher. All visitors had freedom to do as little or as much as they liked of the visit and no one opted to leave the visit before completing all POIs. Images of all visits are provided in figure 7.1 page 7-324










Figure 7-1 Field visits (Wilkinson, 2018)

A summary of the visits in terms of weather and events on the park is provided in table 7-2 page 7-327.

Visit Notes		
Date	Weather	Notes
29/8/17	Cold and cloudy	Park was quiet with few people – able to sit on most benches – changed the visit a little as one bench was being used
1/9/2017	Pleasant with sunny spells	Park was busy as it was a nice day and the schools were just coming out. Billy Bates fair was setting up at the top of the park (quite ironic looking at shooting gallery!) Changed a few of the bench locations to make the route closer to that of the racecourse
2/9/2017	Very pleasant and warm	Park was beginning to get busy with the Leicester Pride march, though we managed to leave just before it started and were only really affected at the top of the park by the Pavilion
3/9/2017	Cold and windy	This visit was postponed from the previous afternoon due to the Leicester Pride March. The park was devoid of the previous day's march and funfair and full of Sunday football activities, people playing tennis and families out for walks.
8/9/17	Cold and a bit windy with some rain in the air	The park was relatively quiet, seats and grass were very wet, but we did avoid serious rain. Participant engaged with all the points of interest and enjoyed looking at the additional material, particularly the maps and the photos of the park. Spent time trying to ascertain the location of the Pavilion
11/9/17	Very wet! And then very sunny	Generally a very difficult visit as it started with awful rain but participants were very stoic. Interesting that they were good in not talking to each other as we went round but it was clear that one of the participants in particular would have wanted to! Park was virtually deserted
12/9/17	Cold but sunny	Participant really enjoyed the whole experience and spoke a lot throughout about what he was thinking about the various tales – visibly amused by some of the content
13/9/17	Cold – a bit wet and a bit sunny	Participant A in this pairing was completely absorbed in the stories and wanting to be on location and engrossed in the experience. Participant B read quickly and enjoyed the whole experience – wanted more horses and danced to the music!
15/9/17	Drizzly, cold and overcast	Cold weather but the participant was fine – enjoyed the visit – asked lots of questions, triggered by the content – spent quite a lot of time reading the material and was interested in reading more on site
19/9/17	Dry but chilly	Visit was late afternoon early evening and temperature was beginning to diminish. Both participants engaged fully with the material, although one arrived a little late and joined us at the second point of interest
22/9/17	Bright and sunny day	A very enjoyable visit, weather was very agreeable and this participant was keen to look at all the material and enjoy the experience
24/9/17	Sunny and very warm	The youngest of the participants, teenagers. Took to using the app very easily – needed no instruction. Engaged with all material – did not show anticipated signs of boredom and completed all tasks at all points of interest. Enjoyed walking the course
29/9/17	A bit cold but dry	The oldest of the participants, eldest being 84 years of age. Engaged fully with the experience. Managed to walk the course, though slowly and used the benches well. No real trouble with the equipment, though lacked a little confidence with the technology. Fully absorbed all the material. Found some of the stories very funny
1/10/17	Cold and a bit dull	Engaged with the material, enjoyed the experience, spent a lot of time looking at surroundings as well as at the app – did not appear distracted from the park by the app

Table 7-2 field visit notes (Wilkinson, 2018)

7.1.3 Participant profile

A total of 19 participants took part in the study. The study group represented a sufficient gender balance of ten males and nine females (table 7-6 p 7-329and figure 7-5 p 7-330) and a broad spread of ages, the youngest being 13 years old and the oldest being 84 (table 7-7 p 7-329 and figure 7-6 p 7-330). The majority of the participants, 58%, stated that they were '*familiar with the park but infrequent visitors'*, and a further 37% identifying themselves as '*regular visitors'* (table 7-3 p 7-329 and figure 7.2 p 7-330), which is in accordance with the specified target group proposed for the prototype in the design process outlined in chapter six, '*regular commuter visitor/occasional visitor*' see Section 6.2.5.1 for product specification details.

Participants were familiar with digital technology with just under half, 47%, declaring themselves to be '*very familiar with apps and use things as google maps when I am out and about*'. 16% described themselves as '*only use my phone to make phone calls - I don't use it for mobile apps*' (table 7-4 p 7-329 and figure 7-3 p 7-330). Both these results are in line with the findings of the Visitor Interest Survey conducted as part of the design phase of the study, see Section 6.2.8.2 page 6-254 for details, and therefore aligned with the anticipated target audience for the prototype product.

43% of the participants described themselves as '*actively interested in cultural heritage'*, which might suggest that these participants were pre disposed to enjoy a heritage experience. 54% declared that they were '*a bit interested in cultural heritage'*, which could indicate that they would be initially interested in, but not automatically attracted to, the heritage and certainly not guaranteed to engage without a stimulating and positive experience. One person was '*not really that interested in history or cultural heritage' (*table 7-5 p 7-329 and figure 7-4 p 7-330). This blend of different relationships with history and culture was appropriate for this study as it not only represented the potential target group for the prototype but also provided an appropriate level of challenge to the prototype in engaging those who expressed a limited interest in history.

Five of the participants had previously taken part in the Mobile Apps study (see chapter four for results of this study) potentially enabling the researcher to make direct comparison of results between the two studies. The researcher does not believe that

using the same participants for the two studies created a significant risk of bias as the first study occurred more than two years ago and, in discussion with the participants, it was apparent that memories of the previous study were quite limited and would not impact on their experience or influence their responses to the prototype or field study.

Q1 Relationship with Park Which of these best describes your relationship with the park?	Count	%
I am a regular visitor who visits the park more than once a week	7	37%
I am familiar with the park but an infrequent visitor	11	58%
I rarely visit the park	1	5%

Table 7-3 relationship with the Park (Wilkinson, 2018)

Q2 Usage of Mobile Phones Which of these best describes you usage of mobile phone apps when you are out and about?	Count	%
I am very familiar with apps and use such things as google maps when I am out and about	9	47%
I have occasionally used apps on my phone	7	37%
I only use my phone to make phone calls. I don't use it for mobile apps	3	16%

Table 7-4 usage of mobile phones (Wilkinson, 2018)

Q3 Level of Interest in cultural heritage Which of these best describes your interest in cultural heritage?	Count	%
I am actively interested in cultural heritage and regularly visit historical places	8	42%
I'm a bit interested in cultural heritage and occasionally visit historical places	10	53%
I am not really that interested in history or cultural heritage	1	5%

Table 7-5 level of interest in cultural heritage (Wilkinson 2018)

Q5 Participant Sex	Count	%
Male	10	53%
Female	9	47%

Table 7-6 sex (Wilkinson 2018)

Q4 Participant Age								
Count	2	3	1	4	4	3	1	1
%	11%	16%	5%	21%	21%	16%	5%	5%

Table 7-7 age (Wilkinson, 2018)

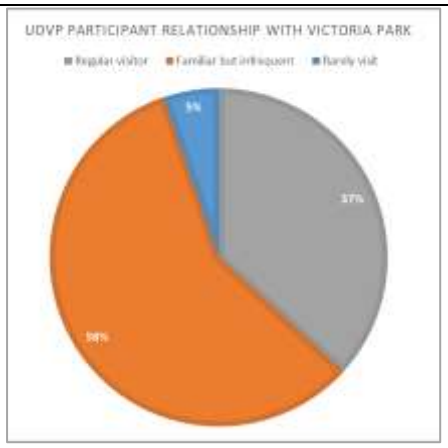


Figure 7-2 relationship with the Park (Wilkinson, 2018)

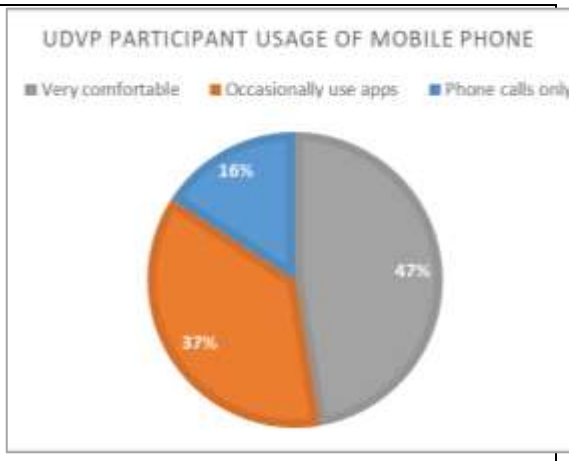


Figure 7-3 usage of mobile phones (Wilkinson, 2018)

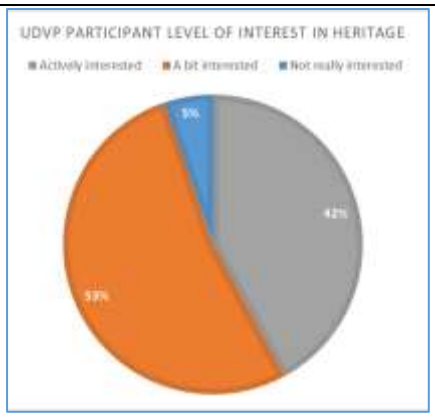


Figure 7-4 level of interest in heritage (Wilkinson, 2018)

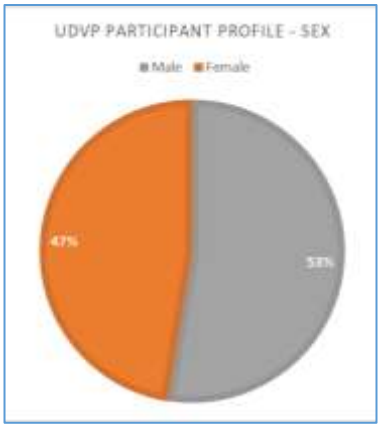


Figure 7-5 sex (Wilkinson, 2018)

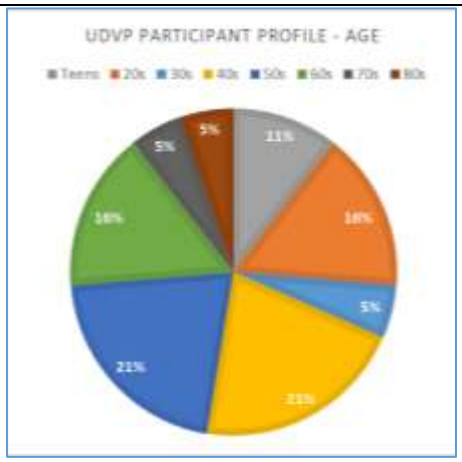


Figure 7-6 age (Wilkinson, 2018)

7.1.4 Results: quantitative data

Results of the quantitative data are provided in tables 7-8 to 7-18 pp 7-331 to 7-338. The statistical validity of these results is provided in tables 7-23 to 24 p 7-339. Discussion and analysis of the results is provided in section 7.1.4.10 p 7-388.

7.1.4.1 Knowledge of the Park – pre visit (questions 8 and 9)

Questions 8 (table 7-8) and 9 (table 7-9) provide information regarding the participants' pre-visit knowledge of the park in relation to the history and the local landmarks.

Q8: How much do you know about the following aspects of Leicester Races 1805-1883 history?	Not a lot		A little		A lot	
Horse racing on Victoria Park 1805-1883	12	63%	7	37%	0	0%
The physical location of the race track	15	79%	4	21%	0	0%
Leicester's gentry at the races	15	79%	4	21%	0	0%
The annual holiday associated with the Leicester race week	15	79%	4	21%	0	0%
Travelling amusements associated with the race week	15	79%	4	21%	0	0%
The murder of Mr Paas	16	84%	3	16%	0	0%
Minor crimes and pickpocketing at the races	15	79%	4	21%	0	0%
Petty Sessions and Inquests	16	84%	3	16%	0	0%
Leicester Borough Prison	13	68%	5	26%	1	5%
Accidents and incidents at the races	16	84%	3	16%	0	0%
The location of the race course grandstand	16	84%	2	11%	1	5%
The history of the race course grandstand	16	84%	3	16%	0	0%
The Henry Coxon Balloon Riot of 1864	15	79%	4	21%	0	0%
The 1868 Royal Agricultural Society Show hosted at Leicester Race Course	17	89%	2	11%	0	0%

Table 7-8 Pre-knowledge of Park history (Wilkinson, 2018)

Q9 How much do you know about the following landmarks in and around the Park	Not a lot		A little		A lot	
De Montfort Hall	2	11%	12	63%	5	26%
The Lodges	14	74%	5	26%	0	0%
The Victoria Park Pavilion	8	42%	10	53%	1	5%
The Old Horse	6	32%	12	63%	1	5%
St James the Greater	5	26%	11	58%	3	16%
The Health Centre	10	53%	6	32%	3	16%
The University of Leicester	2	11%	10	53%	7	37%
The Memorial Arch	3	16%	11	58%	5	26%
The Football and Tennis Courts	2	11%	12	63%	5	26%

Table 7-9 Pre-knowledge of Park landmarks (Wilkinson, 2018)

7.1.4.2 Impact of design features (question 10)

Question 10 explores the impact of various design features included in the app on the level of participant connection to the Park (table 7-10 below).

Q10 To what extent do you feel that this aspects of the prototype app has enriched your connection to Park?	Not a lot		A little		A lot	
The use of the real and authentic articles from the 19th century Leicester Chronicle	0	0%	6	32%	13	68%
The proximity of the Interest Points to where things actually happened	1	5%	7	37%	11	58%
The route of the visit mapping the course of the race course	0	0%	8	42%	11	58%
The contextual information provided by the Race Course Timeline	0	0%	10	53%	9	47%
The contextual information provided by the Landmark hotspots	1	5%	8	42%	10	53%
The opportunity to discover more by accessing the associated website	0	0%	9	47%	10	53%
The photographs and paintings of things which are now gone, such as the grandstand	0	0%	3	16%	16	84%
Stories re-told from the perspective of a fictional but authentic witness	0	0%	4	21%	15	79%
The inclusion of authentic sounds which would have heard at the races such as galloping horses and the Meet me by Moonlight song	0	0%	4	21%	15	79%

Table 7-10 Impact of design features (Wilkinson, 2018)

7.1.4.3 Effectiveness of delivery modes (question 11)

Question 11 focusses on the effectiveness of the delivery methods (table 7-11 below).

Q11 Which of these did you find most effective in helping you appreciate the history of the races on Park?	Not a lot		A little		A lot	
Watching the videos	0	0%	2	11%	17	89%
Reading the Leicester Chronicle articles	2	11%	6	32%	11	58%
Listening to the stories	0	0%	5	26%	14	74%

Table 7-11 Content delivery modes (Wilkinson, 2018)

7.1.4.4 Knowledge acquisition (questions 12 and 13)

Questions 12 and 13 establishes the amount of knowledge acquisition in relation to the content contained within the prototype (tables 7-11 and 7-12 page 7-333).

Q12 How much has your knowledge of the following increased as result of your visit?	Not a lot		A little		A lot	
Horse racing on Victoria Park 1805-1883	0	0%	3	16%	16	84%
The physical location of the race track	0	0%	4	21%	15	79%
Leicester's gentry at the races	0	0%	9	50%	9	50%
The annual holiday associated with the Leicester race week	2	11%	6	32%	11	58%
Travelling amusements associated with the race week	0	0%	7	37%	12	63%
The murder of Mr Paas	3	16%	5	28%	11	58%
Minor crimes and pickpocketing at the races	2	11%	4	21%	13	68%
Petty Sessions and Inquests	1	5%	9	47%	9	47%
Leicester Borough Prison	6	33%	8	44%	4	22%
Accidents and incidents at the races	0	0%	5	26%	14	74%
The location of the race course grandstand	1	5%	4	21%	14	74%
The history of the race course grandstand	0	0%	5	26%	14	74%
The Henry Coxon Balloon Riot of 1864	4	21%	6	32%	9	47%
The 1868 Royal Agricultural Society Show hosted at Leicester Race Course	3	16%	11	58%	5	26%

Table 7-12 Knowledge increase history (Wilkinson, 2018)

Q13 How much has your knowledge of the following landmarks increased as a result of your visit?	Not a lot		A little		A lot	
The Victoria Park Pavilion	3	16%	5	26%	11	58%
The Memorial Arch	2	11%	7	37%	10	53%
De Montfort Hall	13	68%	4	21%	2	11%
The Old Horse	8	42%	9	47%	2	11%
St James the Greater	8	42%	9	47%	2	11%
The Lodges	14	78%	3	17%	1	6%
The Health Centre	16	84%	3	16%	0	0%
The University of Leicester	10	53%	9	47%	0	0%
The Football and Tennis Courts	10	53%	9	47%	0	0%

Table 7-13 Knowledge increase landmarks (Wilkinson, 2018)

7.1.4.5 Engagement states (question 14)

Questions 14 and 15 focus on states and stages of engagement respectively (tables 7-14 and 7-15) and Question 16 collects information on usability (table 7-16) all on page 7-334

Q14 To what extent has this trip…	Not a lot		A little		A lot	
…increased your **understanding** of Victoria Park	0	0%	4	21%	15	79%
…affected the way that you **feel** about the Park	2	11%	8	42%	9	47%
…increased your **enjoyment** of the Park	1	5%	9	47%	9	47%
…made you more **curious** about the Park	1	5%	6	32%	12	63%
…made you more **attracted** to the Park	4	21%	9	47%	6	32%
…made you feel more **connected** to the Park	3	16%	9	47%	7	37%
…made you want to **continue discovering** more about the Park	0	0%	10	53%	9	47%
…increased your **emotional connection** with the Park	4	21%	8	42%	7	37%
…made you feel **inspired** about the Park	3	16%	11	58%	5	26%
…increased your **interest** in the Park	0	0%	5	26%	14	74%

Table 7-14 Engagement states (Wilkinson, 2018)

7.1.4.6 Stages of engagement (question 15)

Q15 To what extent did the prototype app…	Not a lot		A little		A lot	
…encourage you to want to **find out more** (further visiting/investigation)	0	0%	7	37%	12	63%
…**attract** you to engage with the content at each Interest Point	1	5%	4	21%	14	74%
..**keep you absorbed** with the cultural heritage and history of the Park	0	0%	2	11%	17	89%
…provide a **satisfying** experience of visiting the Park	0	0%	1	5%	18	95%

Table 7-15 Stages of engagement (Wilkinson, 2018)

7.1.4.7 Usability (question 17)

Q17: On a scale from 1 (strongly disagree) to 5 (strongly agree) state how much you agree or disagree with the following statements						
		SD	D	N	A	SA
I think that I would like to use this product frequently	Count	0	1	8	9	1
I found the product unnecessarily complex.	Count	17	1	1	0	0
I thought the product was easy to use.	Count	1	0	1	6	11
I think I would need the support of a technical person to be able to use this product.	Count	18	0	1	0	0
I found the various functions in the product were well integrated.	Count	0	0	3	6	9
I thought there was too much inconsistency in this product.	Count	17	1	1	0	0
I would imagine that most people would learn to use this product very quickly.	Count	0	0	1	9	9
I found the product very awkward to use.	Count	17	2	0	0	0
I felt very confident using the product.	Count	1	0	1	5	12
I needed to learn a lot of things before I could get going with this product.	Count	16	2	1	0	0

Table 7-16 Usability (Wilkinson, 2018)

7.1.4.8 Geneva Emotion Wheel levels of EMOTION

Changes in the intensity for each emotion were calculated by comparing the pre and post measures for each participant against each emotion and are displayed in table 7-17, below. The amount of change ranges from a decrease of 2 to an increase of 6. The green column represents the point of 'no change' in the intensity felt. The pre and post levels of intensity for each emotion reported by participants (n = 18) are shown, in percentages, in table 7-18 and table 7-19 respectively, page 7-336. The level of intensity is indicated in numerical value with 0 being the lowest level and 8 being the highest. Positive emotions are indicated by black text, negative emotions are displayed in red text.

CHANGE in levels of intensity for EMOTION	-2	-1	0	+1	+2	+3	+4	+5	+6
Admiration			5	28		6	11	6	
Amusement			56	11	11		17	6	
Compassion			78	6			17		
Contentment			72	28					
Interest			22	39	28		6		6
Joy			72	11	11				6
Love			78	11	6			6	
Pleasure			44	5	6				
Pride			61	28	6		6		
Relief			1						
Anger			94					6	
Contempt			1						
Disappointment	6	11	5	6	6	17		6	
Disgust			1						
Fear		11	89						
Guilt			94		6				
Hate			1						
Regret			78	11		6		6	
Sadness			61		11	11	11	6	
Shame			94			6			

Table 7-17 Victoria Park change in emotion intensity

PRE visit levels of Emotion	0	1	2	3	4	5	6	7	8
Admiration	56			6	22	17			
Amusement	56		6	6	28	6			
Compassion	83		6	6	6				
Contentment	33				22	39	6		
Interest	17			11	44	22	6		
Joy	39	6		11	17	22	6		
Love	5		6	22	6	11	6		
Pleasure	11		6		33	39	11		
Pride	33			6	28	22	11		
Relief	83			6	11				
Anger	83	11			6				
Contempt	89	6	6						
Disappointment	67	6	11	6					
Disgust	89	6	6						
Fear	67	11	6	17					
Guilt	89	6	6						
Hate	89	6		6					
Regret	78	6	6	11					
Sadness	89				11				
Shame	89	6		6					

Table 7-18 Victoria Park emotion levels pre visit

POST visit levels of Emotion	0	1	2	3	4	5	6	7	8
Admiration	33			6	33	11	17		
Amusement	33		6		28	28	6		
Compassion	67		6	6	17	6			
Contentment	33				11	33	22		
Interest	6			6	17	22	44		6
Joy	33		6	6	11	22	22		
Love	44		6	11	11	17	11		
Pleasure	11				17	39	28	6	
Pride	28				17	33	22		
Relief	83			6	11				
Anger	78	11			6	6			
Contempt	89	6	6						
Disappointment	5	6	6	22	11	6			
Disgust	89	6	6						
Fear	72	6	11	11					
Guilt	89	6			6				
Hate	89	6		6					
Regret	67	6		17	6	6			
Sadness	5		11	11	22	6			
Shame	83	6		11					

Table 7-19 Victoria Park emotion levels post visit

7.1.4.9 Visitor Engagement Wheel levels of ENGAGEMENT

Changes in the intensity for each engagement state were calculated by comparing the pre and post measures for each participant against each engagement state and displayed in table 7-20 below. The amount of change ranges from a decrease of 5 to an increase of 6. The green column represents the point of 'no change' in the intensity felt.

The pre and post levels of intensity for each engagement state reported by participants (n = 19) are shown in percentages the table 7-21 and table 7-22 respectively, page 7-338. The level of intensity is indicated in numerical value with 0 being the lowest level and 8 being the highest. Positive states are indicated by black text, negative states are displayed in red text.

CHANGE in levels of intensity for ENGAGEMENT STATES	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6
Absorbed						37	21	16	11	5	11	
Attentive						53	16	11		5	16	
Attracted						42	26	16	5	5	5	
Connected						26	42	5	11	16		
Curious						11	53	16	5	16		
Empathetic						63	16	5		11	5	
Enjoy					5	53	26	11		5		
Inspired						32	37	11	5	5	11	
Interested						5	68	11	5	5		5
Involved						32	21	16	5	16	5	
Like						58	26		11	5		
Ambivalent		5			5	89						
Bored				5	21	74						
Disconnected	5	5			11	79						
Disinterested				5	21	74						
Dislike					5	95						

Table 7-20 Victoria Park change in engagement levels

PRE visit levels of ENGAGEMENT STATES	0	1	2	3	4	5	6	7	8
Absorbed	53		11		26	11			
Attentive	63		5	5	5	21			
Attracted	32		5	11	16	26	11		
Connected	21	5		11	26	26	11		
Curious	11	5		32	11	37	5		
Empathetic	58	5		11	11	16			
Enjoy	16	5			42	16	21		
Inspired	32		11	5	37	16			
Interested	11			16	37	26	11		
Involved	47		11	5	21	16			
Like	16			5	21	37	21		
Ambivalent	68	5	5	16	5				
Bored	68	16		11		5			
Disconnected	68	5		21			5		
Disinterested	68	16		11		5			
Dislike	74	16	11						

Table 7-21 Victoria Park engagement levels pre visit

POST visit levels of ENGAGEMENT STATES	0	1	2	3	4	5	6	7	8
Absorbed	26		5	5	16	37	11		
Attentive	42				11	37	11		
Attracted	16			5	11	47	21		
Connected				11	26	37	21	5	
Curious				5	16	37	37	5	
Empathetic	37	11		5	16	26	5		
Enjoy	16				21	26	32	5	
Inspired	16				26	42	16		
Interested					16	32	42	11	
Involved	16	5	11	5	26	32	5		
Like	5			5	16	37	32	5	
Ambivalent	74	11		16					
Bored	79	11	5		5				
Disconnected	72	11	11	5					
Disinterested	79	11	5		5				
Dislike	79	11	11						

Table 7-22 Victoria Park engagement levels post visit

7.1.4.10 Statistical Validity

To confirm the validity of the results of the Geneva Engagement and the Visitor Engagement Wheel a paired t-test was conducted on the before and after scores of each emotion/engagement-state to test the null hypothesis of each result. The resulting p-values are displayed in tables 7-23 and 7-24 page 7-339. The paired t-test confirms that

there is strong evidence that the prototype was successful changing the many of the emotional and engagement states of the participants. Effective impact can be observed with most of the positive emotional states and all the engagement states which were proposed in the guidance and designed for in the prototype product.

Uncover-Discover Victoria Park – GEW			
Strong evidence that, on average, the IDM has led to changes in these emotions		Insufficient evidence that, on average, the IDM has led to changes in these emotions	
Emotion	p-value	Emotion	p-value
Interest	0.001	Compassion	0.061
Amusement	0.007	Regret	0.096
Pride	0.023	Love	0.108
Joy	0.076	Anger	0.331
Pleasure	0.001	Guilt	0.331
Contentment	0.020	Shame	0.331
Admiration	0.008	Disappointment	0.103
Sadness	0.007	Fear	0.163
No change was recorded for the emotional states of relief, disgust, contempt or hate so were not included in the paired t-tests			

Table 7-23 GEW paired t-test results (Wilkinson, 2018)

Uncover-Discover Victoria Park – ENGAGEMENT			
Strong evidence that, on average, the IDM has led to changes in these states of engagement		Insufficient evidence that, on average, the IDM has led to changes in these states of engagement	
State	p-value	State	p-value
Interest	0.000	Ambivalent	0.235
Curious	0.000	Disconnected	0.105
Like	0.012	Dislike	0.331
Connected	0.000		
Enjoy	0.024		
Empathetic	0.020		
Inspired	0.001		
Involved	0.010		
Attentive	0.006		
Attracted	0.002		
Absorbed	0.001		
Disinterested	0.030		
Bored	0.030		

Table 7-24 Engagement Wheel paired t-test results (Wilkinson, 2018)

7.1.5 Results: qualitative data

Qualitative data was captured through free text answers on the pre and post visit questionnaires (questions 6, 7 and 16) and via the interviews. See chapter 3 page 3-91 for full details of the methodology. Answers were transcribed, collated and coded. A total of 239 codes were identified. These codes were then categorised into themes, resulting in the identification of 5 key themes, 27 sub themes and 60 core themes (table 7-25 page 7-341). A full set of the qualitative data is in Appendix 7A. A description of the codes for each core theme is now provided.

Key Theme	Sub Theme	Core Theme
KT01 Initial visitor/location engagement	ST01 Victoria Park importance to community	CT01 Recreational importance CT02 Physicality of the Park CT03 Relationship with community CT04 Familiarity and regularity CT05 Adaptable and multipurpose
	ST02 Victoria Park importance to me	CT06 Attraction to Park CT07 Nature CT08 Personal activity CT09 Events happening CT10 Personal connection
KT02 Design	ST03 Accessibility	CT52 Accessibility of the app
	ST04 Audio	CT20 Value of Audio Media CT51 Value of sound
	ST05 Authentic Content	CT40 Value of authentic content CT39 Value of authentic language
	ST06 Character	CT45 Value of character CT37 Value of narration
	ST07 Choice	CT49 Importance of visitor choice
	ST08 Digital/Mobile	CT41 Multimedia content CT54 Value of app itself CT19 Value of Mobile CT27 Value of multiple experiences/media
	ST09 Information	CT34 The value of information CT36 Value of historical context
	ST10 Interactivity	CT53 Interaction in design
	ST11 Navigation	CT38 Value of map design CT50 Value of navigation
	ST12 Stories	CT24 The Value of Stories CT43 Value of dramatization
	ST13 Visual	CT17 Value of Visual Media
KT03 Engagement	ST14 Absorption	CT29 Absorption
	ST15 Absorption - cognitive	CT16 Connection - Sense Making CT21 Interpretation/Understanding of the Races CT14 Reported Areas of Learning
	ST16 Attraction	CT55 Curiosity CT59 Surprise
	ST17 Cognitive Connection	CT18 Participant understanding of the Park CT57 The importance of knowing CT44 Understanding historical context
	ST18 Connection	CT31 Making a judgement about the races
	ST19 Emotional Connection	CT47 Empathy CT33 I feel pleased/satisfied CT32 I felt sad - regret

	ST20 Engagement	CT28 Engagement
	ST21 Legacy	CT42 Continue to think about it after visit CT56 Increased recall CT13 Inspired to Engage Further
	ST22 Personal Connection	CT11 Emotional Response CT12 Making a Connection CT15 Participant Appreciation of the Park
	ST23 Visitor Motivation	CT60 Purpose
KT04 Place	ST24 Being on location	CT58 Appreciating the context of the location CT48 Context of location CT46 Value of being on location
	ST25 Connection to Place	CT23 Participant Relationship with Park
KT05 Visitor	ST26 Behaviour	CT22 Participant Behaviour on Visit
	ST27 Processing	CT26 Hearing' Imagining CT35 Imagining CT30 Thinking/processing on location CT25 Visualising

Table 7-25 Theme Table (Wilkinson, 2018)

7.1.5.1 Key theme 1 initial visitor/location relationship

Key theme one describes the visitors' relationships and attitudes towards the park and is divided into two sub themes and ten core themes. Details of the subthemes with examples of some contextual quotations to illustrate are now provided.

Sub Theme	
01 Victoria Park importance to the community	Derived from comments made by participants on the pre-visit questionnaire there is clear evidence that participants have good knowledge of Victoria Park and a clear understanding of the relevance and important of the Park to the city Leicester and local residents.
02 Victoria Park importance to me	Derived from comments made by participants on the pre-visit there is clear evidence that most participants have a fond and strong relationship with the park.

SUB THEME 01 Victoria Park importance to community		
Core Theme	Description	*Participant comments*
01 Recreational importance	The Park is important as a recreational space providing a place for walking, resting, playing, participating in sport and being social. Formal and informal activities are described.	*"The park is very important to local residents as a place of recreation, eg: picnics, kicking a ball, football and walking"* *"the park is important to people living local for a number of different activities: running clubs, commuting, dog walking, meeting friends, outdoor sport activities, families using the playground etc."* *"a place to breath, play, relax, think"* *"a respite from the City"* *"a place for students to hang out and relax."* *"in the summer it's a place of connection"*
02 Physicality of the Park	The Park is valued as being green, free and in the open air.	*"As a green space it gives the perception of countryside in a built up area"*
03 Relationship with the community	The Park plays an important role in the community. Hosting major events in the life of the City it is a focus for both regular and ad hoc celebrations. The Park is also a cultural hub and, on a smaller scale, a place for families	*"VP is subconsciously understood as a cultural hub being as it is the venue for so many identifiable 'Leicester' activities, from the Caribbean carnival to celebrating winning the Premiership"* *"The park is very important to local residents as a place of recreation, eg: picnics, kicking a ball, football and walking. To the people of the City as a whole it is a place to gather for the big events in city life, eg: Kasabian Concerts, Leicester City FC cup winners celebrations."*
04 Familiarity and regularity	Participants presented a fond and familiar relationship with the park. Even those who live further away felt some degree of connection with the location. There was an understanding that some people visit the park frequently, and that, for some, it has become an almost invisible part of their daily landscape.	*"It is well-known and popular because of its size and location. Most people would remember fairs, playing with children, swings, playing sport, walking. I feel it is important to most people."* *"Lots of people walk through it un-noticingly on their way to work."* *"Everyone knows Vicky Park."*
05 Adaptable and multi-purpose	Victoria Park is widely used for many purposes and by many people. The 'open field' nature of the park and the wide spaces within it provide a blank canvas for people to adapt and use at their convenience.	*"it is a big open green space they frequent or rest or leisure activities. Also a place where carnivals and events take place that celebrate diverse interests and philosophies"* *"As far as I'm aware the park is important to people living local for a number of different activities: running clubs, commuting, dog walking, meeting friends, outdoor sport activities, families using the playground etc. Therefore I believe that the park contributes to a healthy and more active lifestyle"*

SUB THEME 02 Victoria Park importance to me		
Core Theme	Description	*Participant comments*
06 Attraction to the Park	People feel a real attraction to the park describing it as nice, beautiful and part of being at home	*"It's a site of significant beauty."* *"The trees are beautiful and it's lovely to watch the seasons change in the park….from the bulbs in spring to the leaves changing in the Autumn."*
CT07 Nature	Nature and being outdoors is highly valued with people commenting on the Park being green, open and a place for fresh air.	*"Open and fresh and uncluttered."* *"Oasis in the city, Green space and 'clean' air. An interlude on the way to town."* *"It's somewhere to breathe when the cars get too much."*
CT08 Personal activity	People are active in the park, walking through it, running, taking exercise and seeing friends	*"I found walking/running calming and relating which helped me to reduce stress in my life. The park provided me with a great opportunity to work on my mental health."*
CT09 Events happening	The Park is a place of gathering, somewhere where major events happen.	*"when momentous things happen in Leicester, eg: LCFC winning the Premiership. It is a place where the whole city can come together."*
CT10 Personal connection	Victoria Park has an impact on peoples' emotion and well being. Some describe it as an escape, for others it is a place which holds many pleasant memories	*"My old stomping ground. Was my park as a child (to age 11) so lots of happy memories.* *Nice memories of grandchildren playing."* *"Victoria Park Is somewhere that provides an escape from work! Half an hour walk through and around it is enough to put troublesome work problems into the proper perspective."*

Table 7-26 KT01 Visitor/Location (Wilkinson, 2018)

7.1.5.2 Key theme 2 design

Key theme two describes the *design features* of the prototype and is divided into 11 sub themes and 20 core themes. Details of the sub themes follow with examples of some contextual quotations to illustrate (table 7.27 pp 7-345 to 7-349).

Sub Theme	
03 Accessibility	Codes indicate that the prototype was accessible across all ages and generations.
04 Audio	Codes demonstrate the value of audio and sound in helping participants imagine the races and feel immersed.
05 Authentic Content	The value of providing original and authentic content is demonstrated with evidence that participants appreciated the inclusion of original materials.

06 Character	The importance of character is revealed with codes emphasising the importance of character in creating connection and supporting empathy
07 Choice	Participants appreciated the opportunity they had to pick and choose options and put themselves in control of their own visit.
08 Digital/Mobile	The delivery of content through digital media on location is a convenient and effective method of providing interpretation and for engaging the visitor with the heritage.
09 Information	The content provided sufficient information helping participants to put the location and the events in the prototype in context.
10 Interactivity	The interaction design supported participants in controlling the app functions.
11 Navigation	The prototype provided a useful route to follow and the map helped people to orientate themselves on the Park.
12 Stories	Codes confirm the power and potential of stories to deliver rich evocative experiences enabling visitors to engage and imagine.
13 Visual	The videos and pictures were both useful in enriching the visit despite reservations by some participant that they would not want to watch videos outside.

SUB THEME 03 Accessibility		
Core Theme	Description	*Participant comments*
52 Accessibility of the app	The prototype product is appropriate for both younger and older audiences	*"I'd feel confident in giving that to my grandparents and I think that that's something they would also enjoy, and especially if you di like just one loop of Victoria Park – that would definitely feel like something we could have done together"* *"I think the most important bit for me is that it is so accessible, like even if I was not me and if I was 16 years old going forth and back to school I would listen to it"*

SUB THEME 04 Audio		
Core Theme	Description	*Participant comments*
20 Value of audio media	People like listening to things, especially as they walk. The sound content provides context and helps people to imagine the events being described	*"I like the narrative stories as well because that allowed you to absorb the information whilst being mobile"* *"I liked the sound effects, so I liked the stereo horses going past your ears – I want more horses – and I liked the crowd noise and things like that, I thought that was…it helped bring the atmosphere in because you could cut our where you were at the time and superimpose upon it what it would have been like, so I was finding myself listening to the stories, not seeing the park but seeing the park in the story"* *"the sound effect you had of the horses, that was fantastic, I mean I've not seen, I think I might have seen one live race in my time, I've watched the Grand National many times on TV and the thing that you do get is just the noise"* *"you had the sound of the horses rushing past and I don't know how many horses were in that but when you're reading the story about poor Mrs Hubbard it does actually make you go (sharp intake of breath) that would have been what was coming for her, went over her"* *"really noticed a lot of it [the sound] as we were walking round and it really helps to sort of be able to imagine it"* *"I think the audio helps you along cause obviously you can hear the sound of the hooves and it makes it a bit easier than just trying to picture it yourself"* *"I think they are more evocative of feelings rather than facts – when I read I get the facts, when you hear stuff its more feelings"*
51 Value of sound	The sounds are effective in creating atmosphere and supporting an immersive experience	*"I think that the sounds certainly helped and I think when you are in the place, you've got some of the sounds and you can sort, or I can sort of try to fill in the visuals, trying to get that – where I am, seeing the crowds or listening to the crowds and the bustle and seeing those horses go round"*

SUB THEME 05 Authentic Content		
Core Theme	Description	*Participant comments*
40 Value of authentic content	Authentic content, historical accuracy is important. Information was more powerful because it was real	*"cause it was historically accurate of what had happened – it wasn't 'imagine yourself at the racecourse' it was actual 'here's live events of something that was here and this is what happened to them so it was much more real than sitting at home trying to picture the races and reading exactly the same information* *You knew it happened because you had it backed up with the newspaper reports and … you've got the documents behind it and you know that there's proof and research there."*
39 Value of authentic language	The language from the original Leicester Chronicle reports is engaging, evocative and entertaining, although some found the language tricky to understand.	*"some of the language in some of the reports is brilliant cause, if you've got an imagination you can get a bit just carried away with the language* *there's some wonderful turns of phrase in some of the news reports - you read and you're just thinking these are colourful characters"* *"the use of language and how its phrased is quite telling"* *"I want to hear what they said in their own words*

SUB THEME 06 Character		
Core Theme	Description	*Participant comments*
45 Value of character	The use of characters helps to create emotional connection and provides a genuine voice for the content.	*"The ease of telling, the addition of the fictional character it's not just 'in 1984 x, y and z happened, therefore we look now' you know…it's the narrative that is so passionate and empathetic I can just sort of …it's not like a history lesson – that's what I like cause I don't like history that much!"* *"I think getting a wider demographic involved in history you need something else, you need to be able to say – there were two guys that challenged each other in an archery contest, one of them was left handed, which at the time would have been significant because they were seen as a bit suspicious and all the rest of it so the fact that they point out that he wasn't the guilty party is also really interesting and then you've got the fact that unfortunately there was a little boy – who didn't want to be there! So it's not just that he was there and got shot but you get the - he was forced to go there by his dad and then got killed and you're just like – that's horrible but at the same time that's really interesting because you then have sympathy for his mum – why would you – but at the same time you kind of get involved in the story and reading about that you then find out about the court case that followed and they mystery of the man in the blue frock coat that nobody ever found out about as this guy scarpered off to wherever he came from you know for the rest of his days he was like, the guy that shot the boy but didn't tell anybody and well you know – he could well have been a grandfather of however many and there's people that have since been to university at Leicester and didn't know that their great great grandad shot this boy in the eye… and the connections and you just kind of think …"*
37 Value of narration	Use of first person and 'real time' narrative creates a feeling of being there when the event is happening, which in turn supports the immersive experience	*"It sounds like a genuine voice- it's a racing scene – maybe its all just caught up in the excitement of that and you actually feel like you are leaning on the post with these women and the horses are coming at you and you're thinking – why haven't you turned and seen Mrs Whatsaname wander off? (You've read the story cause you know what's going to happen) yeah your kind of invested even though it happened a hundred and whatever years ago I'm thinking 'why don't you turn round' – there was a slight element – I think I did the old suspension of disbelief!"* *"they were speaking in real time, so they were saying – I am seeing this…rather than they were telling the story later."* *"I think part of it is that its told in the present tense – that makes a big difference – I think if you read.. because that is emotional language, whereas if you read it as an account of*
SUB THEME 07 Choice		
Core Theme	Description	*Participant comments*
49 Importance of visitor choice	Choice and options are important as they enable visitor to pick and choose and put themselves in control of the visit experience	*"it's nicer having shorter bits that you can pick and choose which bits you want to listen to rather than having one thing that's just running on and on and on and you're more in control of which bits you want to listen to and you can pause it if you want to stop and have conversations and so it's nice the fact that it's more usable"* *"you can choose what suits your circumstances at the time, so if you were going for a dog walk by yourself you could just listen to all the audio bits and ignore the rest of it…another time if you were going to sit on the park for a bit cause it was nice weather and you felt like just getting some fresh air – so having those different options just gives you more choices more really"*

SUB THEME 08 Digital/mobile		
Core Theme	Description	*Participant comments*
41 Multimedia content	The multimedia presentation of the content supports the involvement of the visitor using a range of senses and using stories to enrich the factual information. The app is more effective than a leaflet	*"if it's leaflets you've just got the visual effects and I think having the audio makes such a big difference – so listening to the stories is – it just brings things to life completely in a way that reading bits of paper doesn't at all so I think it totally changes it."* *"I think the technology is definitely a helpful influence – and it make it more accessible as well, cause you could take that on the park at any time"*
54 Value of app itself	The app is a convenient way of presenting information, more effective than a book, a human guide or accessing the same material at home. The app is successful in holding attention	*"it's a much more convenient way of presenting a vast amount of information and you can present it in – I mean there were three different ways of presenting the information on there and that's really good – I think – because not everyone – some people enjoy the dramatized bits, some people enjoy the video, some people enjoy reading – you won't get that from any other source"* *"What a guide couldn't give you is the pictures – that's where you score with this and I think that because there isn't really a lot of landmarks left of it and with the pictures and the maps etc you can actually visualise it better than if somebody was wondering around and sort of saying, 'well over here' and – particularly if it's like 20 or 30 people in the group – I think that the IT expertise helps from that point of view"* *"that I've used other apps and they haven't caught my attention in the same way. The last one was the Stonehenge – I got bored it and I stopped listening after a while. I think they went on rather a lot as I remember and I'm not sure I could pick up exactly where I was – going round the stone – it didn't hold my attention"* *"well you could put that on the net generally as an app and make it available and somebody down in Surrey could pick it up and explore it and find interest in it but they wouldn't have the context of sitting there and experiencing that sort of imaging what's going on"* *"Well if it was just a book and I was reading it at home I wouldn't continue reading it – I'd get bored…but if you are immersed in it then I'm up for it"*
19 Value of mobile	Mobile technologies allow more possibilities than signs. Reading material on the app while on location connects the visitor with the location	*"I would probably not stop and read a sign about the history if it was on the park, I would just, this is the thing...I couldn't be bothered to stop. I think usually when I go to the park I like walking around, or sitting somewhere. Purposefully going out of my way, stopping to read an historic sign, or many historical signs I would probably not do."* *"It's on the phone – and I know lots of people don't like reading books any more so it is something they can access easily, it's not hard to, you don't need to have a specific educational background to understand it"* *"reading the paper is good in the park, because you actually take that in quite quickly"* *"you've got it in your hand all in one place – the immediacty of it is maybe a bit different? Cause you're able to press something and it loads. You can change the media quite quickly whereas if youre having to put the map down to look at something else and then you're flipping pages"*
27 Value of multiple experiences/media	Although the use of the report, the animation and the narrated stories was repetitive there is value in repeating the same story from a different angle as it reinforces the message	*"all three elements together fix it. It sort of reinforces it makes it real."* *"the funny thing about duplication I thought about as we were leaving was the duplication actually helps it to sink in. I actually quite like it cause I've taken away more memories than I otherwise would have done"* *"to some extent I liked the repetition, though it was a little bit annoying but I liked the repetition because I think, 'oh yes the grandstand was here wasn't it – which I perhaps hadn't picked up a previous time"*

SUB THEME 09 Information		
Core Theme	Description	*Participant comments*
34 The value of information	People like to engage with facts. Those who already know something are pleased when they find out a little more. People enjoy being able to access as little or as much information as they want during their visit to the Park	*"I probably won't go home and look up the Leicester treadmill – cause I've got other things to do – but because it was there, because it was available, and I can go into it if I wanted to then it was good"* *"It wasn't overbearing in that sense and I think a lot of places/sites are overbearing to put so much in it at the same time"* *"my particular experience today was that we sit down, we get the initial paper Chronicle information etc and then you do the pictorial commentary – they are the factual stuff, I was very engaged doing that."*
36 Value of historical context	The prototype product provides historical context for the location which is considered important	*"I think it kind of puts into context like some of the stuff that I see on the park, that I keep bringing up, like all the big festivals that happen on the park, it kind of solidifies this kind of history of it being this big gathering place."* *"before doing this app I thought it was just a green space, it was land that wasn't developed, that was available for people to go on and just kind of chill out"*

SUB THEME 10 Interactivity		
Core Theme	Description	*Participant comments*
53 Interaction in design	Interaction with the product supports visitor control of the content	*"it was* interactive in as much as I could just *tap on to things"*

SUB THEME 11 Navigation		
Core Theme	Description	*Participant comments*
38 Value of map design	The map is useful for orientation and for seeing how the Park had developed.	*"I liked the map so you could see where things were and the pictures round it so you could orientate where you were"* *"I liked the map so you could see where things were and the pictures round it so you could orientate where you were"*
50 Value of navigation	Walking a route provided an overarching theme and purpose for the visit	*"you don't know what's going to happen at the next checkpoint – it's quite nice sort of wondering what the next story's going to be"* *"you could see where actually everything was, walking round, where the horses would be, like the actual race course"*

SUB THEME 12 Stories		
Core Theme	Description	*Participant comments*
24 The Value of Stories	People connect with the stories. The dramatizations help visitor to imagine and understand situations. Stories enrich the factual information	*"I enjoyed the individual stories which made it more 'alive'."* *"there's loads of social history tied up with the place as well – I didn't think I liked social history all that much cause it can be really dry – but things like this don't worry me about the whole dryness thing I just get involved in the story"* *"If you want to empathise maybe you need to have something emotional to connect to, so I'm not an 'archivy' kind of person, I like looking at pictures, I like getting on to the story."* *"I really liked the story about the thimble riggers and the light fingered gentry – as kind of a catch all for the pickpockets and the people with their dodgy stalls that the whipped away and you know they were away before they know they were there – all of that – that kind of 'oliver twist' element to it cause – you know it happened as a kind of thing – you know – bow street runners and all of that sort of business and you read about someone that actually got caught doing it, you read about their tricks, so the pricking the garter thing, you know – one way of getting away with it – drop your bit of fabric drop the pin – they'll never find it*

		in the ground, you can say – 'not me guv'. I like that – I think because of the colour, its not just lovely, gentle, country folk, humble, that kind of thing having a jolly on the park, its real people"
43 Value of dramatization	Dramatization is evocative, holds attention and brings emotion to the material.	*"Seeing things through other people's eyes is quite fun as well. You get to soak up the atmosphere kind of thing – the description of the pick pocketing in the pub is hilarious"*

SUB THEME 13 Visual		
Core Theme	Description	*Participant comments*
17 Value of Visual Media	Videos and pictures help people to understand and visualise the history.	*"the fact that we have got the video and the stories being told has opened up the whole thing, illuminated it all, just makes such a difference because it came alive* *Indeed because of so many paintings in there – specifically the paintings. So the story about the boy being hit with the bow and arrow they are wearing distinctive clothing from the early 19th century as opposed to some of the sketches of the agricultural show where people were in the late Victorian period so the coats are of a similar shape and size but the top hats"*

Table 7-27 KT02 design (Wilkinson, 2018)

7.1.5.3 Key theme 3 engagement

Key theme 3 describes the engagement features of the prototype and is divided into 10 sub themes and 21 core themes. Details of these core themes follow with examples of some contextual quotations to illustrate (table 2-28 pp 7-350 to 7-355).

Sub Theme	
14 Absorption	Participants found the prototype absorbing.
15 Absorption - cognitive	Participants were able to connect with the Park and make sense of the historical events. This is clearly demonstrated in the codes as people reported that they had learned things and were able to describe the races in rich detail, as if they had been there.
16 Attraction	The prototype was successful in making people curious and surprised.
17 Cognitive Connection	Participants understood issues relating to the Park and felt that it was important to know more.
18 Connection	Participants were able to make judgements about the races demonstrating that they had made a connection to the events interpreted by the prototype product.

19 Emotional Connection	Participants reported empathy for the characters in the stories and regret that the races no longer happened on the Park, and sadness that so few people now know of these events.
20 Engagement	Participants were fully engaged throughout their visits and that the interpretive digital media maintained their interest and attention.
21 Legacy	Participants reported that they thought they would continue to think about the races, particularly on future visits to the Park. Some were inspired to investigate further and several were keen to tell their friends and families about the races and associated events.
22 Personal Connection	Participants reported being personally affected by the stories relating to the races and they felt emotionally connected to the events described.
23 Visitor Motivation	There was a sense in which completing the route of the race course and visiting all POIs was a motivating factor.

SUB THEME 14 Absorption		
Core Theme	Description	*Participant comments*
29 Absorption	The prototype product provides an absorbing and immersive experience	*"so the information on the app does help to connect to the various different places and events and the general feel of the place"* *"Um – it gives you time to ...listen to something and not get distracted…it was almost like meditation thing, you're listenin something and just being away from other distractions it just allows you to feel that person's story, perhaps know that you on the same ground as them..like um"* *"well something happened here and something happened the you're standing where it happened – so you're becoming part the story in a way I suppose"* *"I felt it more significant and more poignant when we were talking about the lady who was unfortunately killed that we w near, approximately near where that happened"* *"I think it's one of those things that takes you out of time for a little bit – so just for an hour we were pretending we were in l different time and it was just a funny thing – like all the cars a traffic – in like 150 years ago – and thinking no this is what it used for then so in a blink you were in a bit of a time hop…but still feels like that hidden bit of that was there all along and y never know it – and the different layers – so if you started loo at the agricultural think that would be a different layer, this w the horses layer and then for different times there was differe uses and ultimately most people will just look at the…"* *"It takes you away from you – you're not you when you are or park with that you are at the races. You are with all this hustl and bustle so it's like stepping out of your own world and beir another world – so I can understand why people feel better w they come back."*

SUB THEME 15 Absorption - cognitive		
Core Theme	Description	*Participant comments*
16 Connection - sense making	Using the prototype app people can relate the historical events of the Park to their own lives and contemporary experiences, allowing the visitor to make their own meaning and interpretation of the cultural heritage.	*"Now learning a bit more from the App about these race course holidays and the 20 or 30 thousand people who gathered you can see that Victoria Park – there's a continuance there, and it was also hugely important to the people of Leicester in the 1840s, in the 1860s, in the 1890s all the way through to when they build the memorial, its…many parts are there for recreation and that is for recreation but it's also obviously at heart a gathering place."* *"So that's my take on it – busy, bustling and it made me think of the when Leicester City won the championship and they got all those people on to the park,"* *"it's a bit like going to the Gran Prix isn't it – whoosh – it's gone"* *"whereas what we are talking about here is a long period of cultural history and what you get through there = - you get the history of it – you get how it developed through the movement of the racecourse, about the development of new buildings about incidents, stuff like that but all of that puts it into the context of 19th century people have got an image of and so when you take the stuff that the app gives you which is stories, scenarios, um bits of colour you can build a much more effective picture from that"* *"I knew it had been a racecourse and I hadn't really pictured the extent of racecourse within the park ground so I didn't realise it was as extensive as it was – right round the edge of the park, but I suppose I'd never really pictured it, I'd never really imagined"*
21 Interpretation/Understanding of the Races	The prototype app enables visitors to build a rich colourful picture of the races and the events surrounding the race week	*"Well if I was in the crowd it would have been noisy, smelly, bustling, exciting, depending on your age, a bit frightening, so if you were small and there was lots of people. Yes, I wouldn't have liked the drunkenness, the brawling"* *"I imagine that actually probably there would be a bit of an expectation amongst people like myself that you are having some time off work, that there was a holiday, and that there were races going on – there were stalls, there were things to see, there were bands to watch, there was entertainments and you'd probably go up there with friends – I think there'd be quite an expectation…"* *"Crowded, fraught with (laughs)… a bit risky! (laughs) yes a bit risky but an interesting experience"* *"I'd want to be near the noise for the race itself just to kind of get the atmosphere, get the experience cause it does sort of – immersive"* *"My guess is that it would be extremely noisy – well it depends, obviously there were some races where not so many people turned up, or certain dignitaries at least, and it would depend on the weather hugely cause obviously it would get extremely boggy and horrible if the weather is bad cause it's in September but generally"* *"Well I was thinking it would depend whether I was affluent and I was there to actually be participating in it or whether I was there to pickpocket in which case it would be very nice to dress up, be sort of in all your finery and to be part of watching races, where as if you didn't have any money I think it would just be lots of noise and just quite a stressful situation of trying to see where you were likely to get to – to steal something and if you went dressed nicely I think there'd be a feeling you know that this was for all the rich people coming in to watch the races and you were just purely there to get what you could while they were around. I imagine if I was there I would be more interested in the stalls and the fair going on than I would the actual horse racing side of it"*

		"I think it would be quite a good day out, you'd meet quite a few similar people there. I think the pavilion would be an idea place to watch from and it's quite a compact area I expect the reason why it eventually moved, was as they said at the time, the turns, I think from a spectator point of view that would probably be quite exciting, from a health and safety point of view, from the point of view of the race horses etc probably not…so I think it would be a really good experience for the day" *"I'm wandering round the beer tents. I might be eyeing the pretty ladies – I'm imagining that I'm a lot younger than I am now and not married, so eyeing the pretty ladies, I'd have been trying my arm at the various stalls and stuff* *I think it would have been amazing, absolutely amazing. I think people would have really really worked towards it because there was so few holidays and so few special occasions that it must have been something to really really look forward to and get excited about for days and days, weeks"* *"Ohh – I think it would have been a spectacle, and I think lots of people from Leicester city would have gone and it would have been quite hustling and bustling and a mix of classes"*
14 Reported Areas of Learning	The prototype app supports a broad range of learning. Participants reported learning about events, the park and local buildings. Those who already knew quite a lot reported learning more. Significant surprise was expressed as to how much more there is to the Park than they realised before the visit and how much they didn't actually know (even though they thought they had).	*"so it allowed me to bring what I already knew from outside and superimpose it on the park, which, if I'd ever thought about it I'd have though was built as it was, it's called Victoria Park, I would have assumed it was Victorian for people to perambulate around and that was that"* *"It's got deeper roots than I'd ever imagined"* *"To the city the thing that really became apparent to me in a huge massive way was what that space means to the people of Leicester when there is something really big to celebrate or"* *"So until we went round the park I had no idea that it was a, that it had been used for racing, no idea of that period of history at all, in fact as we just said before we started recording, I guess conceptually in my head I'd imagined Victoria Park almost popping into existence in the 40s or 50s as a kind of post war – ooh – shared space let's make something nice for people who have come back from after a terrible period"* *"Much more interesting – well having been aware of Vicky Park for playing cricket on it over the years, and playing football on it over the years and now running round it, its recreational for me but there's so much more to it that I was just not aware of, and interesting things, like death and different sports, and riots and things like that"* *"Under appreciated in that having not known about those things and thinking – I'm not alone here cause I was born about 500 yards away from where Mrs Hubbard died and having lived within 3 miles of this place for a long time, I don't know about it and therefore, who else does know about it and probably not enough people"* *"what it showed me is it's always been a cultural hub for the city and actually those things that we do now in the park aren't artificially overlaid on to it they are part of a long tradition"* *"it's now got an added element and I'm pretty sure that I'm gonna hear hooves when I go through it in the future."* *"There were several stories I hadn't heard before, certainly two or three that I'd not heard before so that was interesting and for some reason I think the one I'm going to remember is the woman who just stole and then ended up in*

SUB THEME 16 Attraction		
Core Theme	Description	*Participant comments*
55 Curiosity	Visiting the Park with the App inspires people with curiosity	*… if the opportunity arrived to find some supplementary information it would be …if I saw something in the bookshop or whatever I would pick it up and consider buying it – if there was something say about the Royal Show – if somebody happened to write a book about it – it would make me more likely to pick it up and take a look at it"* *"It's encouraged my knowledge and my interest and I would like to go and learn more – it's wetted my appetite and I think from there I would want to know more about Leicester"*
59 Surprise	The prototype product creates an element of surprise	*"it just leaves me with that, 'why don't we know about this' feeling. So it's that fact,* almost, that it is such a historic place and I, and I'm presuming lots of other people just don't know that so it just sort of gives *me that question mark really – why don't we know about this?"*
SUB THEME 17 Cognitive Connection		
Core Theme	Description	*Participant comments*
18 Participant understanding of the Park	The prototype increases visitor understanding of the Park, particularly in relation to its importance to the people of Leicester, its role as a gathering place, its continuing contribution and relevance to the City and the different used over time.	*"it had a great impact on people which would have lasted over a period of time. I think it's the influence on people's lives which I find quite amazing really. It was very important to people wasn't it."* *"gives you the idea that the park keeps changing its uses, keeps changing from just being what would be almost like an agricultural area into.. it almost being a field into what it is now – and that gives you the idea that even what's happening now is just change again"* *"Gives you an idea that its not always been like this – things we see on it now are not the same as the things we saw then"*
57 The importance of knowing	Knowing more about the Park is important	*"I think an awful lot of people would take a view that when they know more about, and more about the sense of what it means, then they would be more interested, they would be more passionate about making sure it's not lost"* *"I think it's very positive – something I've said with friends in conversation in the past – so many people don't know very much about the history of the place they live – they often know so very little about it. A small minority of people who have an interest will delve and find out but many don't. I think – I suppose – does that matter? It matters to me. I think it matters."*
44 Understanding historical context	The prototype product enables people understand the historical context for the Park by sing how things have developed	*"just a very obvious connection of how the city's changed … the idea that it worked in 1924 but it doesn't work now, like the original conception worked but because – either the trees have grown or the buildings have been put there it doesn't quite work any more"*
SUB THEME 18 Connection		
Core Theme	Description	*Participant comments*
31 Making a judgement about the races	The prototype product successfully enables visitors to make a connection with the races, which is demonstrated by their understanding of the races in their ability to make judgements about the race week.	*"Ohh – I think it would have been a spectacle, and I think lots of people from Leicester city would have gone and it would have been quite hustling and bustling and a mix of classes"* *"I would probably have voted to keep it here. I think I just see it as a big community thing and I wouldn't want to see it move away from this area cause obviously it will bring a lot into this area"* *"I think I would probably have felt quite annoyed that it was having to move somewhere else cause Oadby would feel quite a long way away out of the City and it wasn't, there didn't seem to be any justification for needing to move it other than the fact the jockey club didn't want to have it there any more* *If I had enjoyed the races I'm sure I'd be very unhappy about it and voted the same as the other people. Not sure I would have been happy about other people deciding what was good for us. Why should the jockey club have a say on the races?"*

		"I would have voted for the races to stay where they were and for the same, OK this, the thing for me that triggers is um, it triggers the kind of revolutionary working class part of my psyche"
SUB THEME 19 Emotional Connection		
Core Theme	Description	*Participant comments*
47 Empathy	Empathy created when visitors felt emotional connection with a person's story.	*"it just allows you to feel that person's story"* *"you then have sympathy for his mum"*
33 I feel pleased/satisfied	The prototype app provides a satisfying experience	*"It was a* pleasant feeling that I understand a bit *more."*
32 I felt sad - regret	The prototype app prompts an emotional response	*"I did feel a bit sadder thinking that this was all here and now it's not"* *"so a little bit sad that so much is lost really"* *"I think it's a shame that 90% or more of the people who live in Leicester don't know what we know about that park"*
SUB THEME 20 Engagement		
Core Theme	Description	*Participant comments*
28 Engagement	The prototype product engages the visitor by providing an absorbing experience which creates interest, hold attention and is evocative.	*"it helped bring the atmosphere in because you could cut our where you were at the time and superimpose upon it what it would have been like, so I was finding myself listening to the stories, not seeing the park but seeing the park in the story."* *"Seeing things through other people's eyes is quite fun as well. You get to soak up the atmosphere kind of thing"* *"It's encouraged my knowledge and my interest and I would like to go and learn more – it's wetted my appetite and I think from there I would want to know more about Leicester"* *"I think it kept me pretty much absorbed all the way round but there were some places where the context of where we actually were meant less – was less significant than others"*
SUB THEME 21 Legacy		
Core Theme	Description	*Participant comments*
42 Continue to think about it after visit	The prototype provides an experience which visitors will recall, especially when they return to the Park or talk to others	*"the next time I go there I shall remember a lot of the stuff as I walk through, which I wouldn't do necessarily if I'd just read about it not being out there. Because I think you sort of associate then the visit with the information more"* *"now I use the park for Victoria Park run and that's the bend where comes round and its usually the bend where I'm absolutely dying, so next time I do that I'll think of Mrs Hubbard who actually did die"* *"I suspect next time I walk through the park one of the stories will come to mind – especially if I see a little boy sat on his own on the grass – oh my goodness."*
56 Increased recall	Associating the content with the experience of visiting the park can increase recall	*"I think* now I've heard it through the app I'll probably remember it a bit better actually – cause I'll be able to associate the memory with putting the app on rather than just a rather anonymous talk or book that I've read
13 Inspired to Engage Further	Visitors are inspired to engage further with the Park by independently looking at more information and sharing what they have learned with others	*"Will look up more information for myself, see if there are any more photos and share all this new information with my children!"* *"I would however go back afterwards and be more investigating on something like a website"* *"As we were walking round I was thinking I can't wait to bring the boys and Dan here and go – this is where this happened – like there is something about standing on a spot where somebody stood before you and seeing the same view"* *"Want to go again – yes I want to find out more about it"*

		"thought-provoking, cause I hadn't thought about the history of the park like that before so now I'm thinking, ohh I wonder what else was on the park which I don't know about now"
SUB THEME 22 Personal Connection		
Core Theme	Description	*Participant comments*
11 Emotional Response	A range of different emotional responses were reported including feeling proud to live by the park, being fascinated by the experience, interested in the stories and characters and enjoyment of learning about the past and walking the route of the race course. People also described sadness at the disappearance of the race course and the buildings associated with it.	*"Sad, annoyed at the loss of the beautiful Pavilion Grandstand."* *"I felt proud that I live by it and walk through it."* *"I really enjoyed learning about the people and the events at the park, rather than the facts and figures about the structures"* *"I enjoyed the individual stories which made it more 'alive'. I enjoyed walking the course. It made the park more than an open space"* *"I think it would be very nice if that was still part of Leicester's history because there's nothing on the park that you can see"*
12 Making a Connection	Participants commented on how the visit brought history to life, particularly through the imagery, the stories and the characters involved. Being on the spot where things actually happened deepened the connection and the overall experience	*"The app certainly brought to life images of horses thundering around the course, of the fairs and stalls and general holiday atmosphere."* *"I enjoyed the individual stories which made it more 'alive'.".* *"It was fascinating to discover all the local history tied up in the park. The colourful characters, the colour and life – the horrific stories – poor Mrs Hubbard – placing that in the context of the races – brings that time to life – looking at the old pictures of the buildings and the views of Leicester at the time help you picture what it would have been like"* *"Now it will seem odd to be playing on the park knowing that in the same spot other things were taking place years before and knowing what exactly happened and was even said on that spot."* *"Just sitting there and thinking about what has happened here it makes it more realistic and as if history kind of gives you a little bit back and comes to life"* *"although things have changed there are still things where you can put yourself in the context and having the stories it sort of brings things to life"* *"The app certainly brought to life images of horses thundering around the course, of the fairs and stalls and general holiday atmosphere"* *"It was very very interesting, challenging I think – the history – the racing that went on, the amusements and celebration and all this – it caught my interest – I'm just thinking about what had gone on at the time and how it affected people's lives, even thought it was only a few days"* *"I can visualise people actually, you know, people on the park actually doing things, watching, dying (!)"*
15 Participant Appreciation of the Park	The prototype app helps to increase visitor appreciation of the Park	*–" it's got history! Which I hadn't really thought of"*
SUB THEME 23 Visitor Motivation		
Core Theme	Description	*Participant comments*
60 Purpose	Completing the visit provides a sense of task and purpose	*"But I did want to see it through and there were some interesting parts"*

Table 7-28 KT03 Engagement (Wilkinson, 2018)

7.1.5.4 Key theme 4 place

Key theme four describes the importance of place and being on location and is divided into two sub themes and four core themes. Details of these core themes follow with examples of some contextual quotations to illustrate (table 7-29 pp 7-356 to 7-358).

Sub Theme	
24 Being on location	Codes in this sub theme confirm the importance of being on location to fully appreciate this experience.
25 Connection to Place	Codes in this sub theme describe how the participant relationship with and appreciation of the Park have deepened as a result of using the prototype product to visit the location

SUB THEME 24 Being on location		
Core Theme	Description	*Participant comments*
58 Appreciating the context of the location	The prototype app helps the visitor to appreciate the location they are in.	*"– it's good to know stuff about places you go"* *"It's, a lot of the information I've heard or read before and it's reminded me that I'd forgotten it, so that's good,"* *"cause it's got a sense of history and what have you, all things about it. It means the value of it is greater"* *"It's emphasised or reminded me of the importance of the park for the Victorian town, so that's a definite positive"*
		"Yes- being there and being able to say well this thing I'm being told happened here, happened here where I'm standing. Yeah – I guess that is more powerful than just being told that happened where you were standing yesterday or where you are going to stand tomorrow" *"Yeah I do think it makes a difference. Because you can feel the space. You can feel the space and how it feels and how big it was – sitting here and learning about the grandstand would have meant nothing, it's a 4 storey building – fine – 4 storey building. Seeing it in context on the park with the photographs that are on the app gives it more validity"* *"I think it is quite important to go out on location to see it because then you can actually visualise where it is better, especially the bend where Mrs Hubbard was hit"* *"I do think it's important, cause I do like to see things and you could see where it was, whereas I didn't really think about it too much when I was watching the video, I was just like, oh yeah, that'll just be the loop in Victoria Park but once we sat on the bench near the Moscow State Circus you could actually see – oh yeah – that's exactly where it would be. Yeah I think it was definitely important to be on location for things like that"*

48 Context of location	Being on location with the app provides relevance and aids connection to that location	*"You can see where things were easily – when I was doing my degree we were looking at a building in Spain, trying to find out where the walls were – daft as it sounds, so you're looking at a plan, trying to visualise it in your head and working out what went where – difficult to do – its an abstract thing. If you're in a park and someone says – and this is the track, and the grandstand was here and if you face this way you saw this and if you face the other way you saw that and in year whatever it was, at this corner such and such a thing happened – you're like – connecting to it differently because – yes its still an active imagination – but its not as abstract as with a bit of paper – well something happened here and something happened there – you're standing where it happened – so you're becoming part of the story in a way I suppose"* *"so that was where I actually am now, or you're looking at something like the memorial and you think oh that's actually very big"* *"we walked it so I can kind of vaguely picture it but it is vague cause as you say there isn't anything left but sitting on a wall by the tennis courts that was kind of helpful – that did get me a bit more – cause I was thinking – if this was the grandstand then this would have been where it would have been seen from – the start and finishes, you know the important bits"* *"For me it was the geography and the orientation. It allows you to say – 'oh it was there was it'"* *"I think I would sooner do it whilst I was there than do it when I got back home because I think you are in the place and you are in the moment whereas if I come back home I'm a little bit disconnected from the place"*
46 Value of being on location	Being on location adds context such as scale but also a connection to the past by being in the same place as the events which happened as well as an authenticity of being outside.	*"The fact that all that happened – there. I was looking at that park and realising that at that time all that was happening – I mean it wasn't just the horses racing round, it was everything, the side shows, people drinking, pick pockets – all sorts of things going on – so much went on on that one bit of grass – it's quite incredible isn't it really. Just one patch of grass and if you put all that in, just think if you did a painting of that and tried to paint it, all that was happening. I'm just staggered at the amount that went on there"* *"Walking around the race track does give you an idea of the scale of it – you wouldn't guess that– you wouldn't really get the idea of scale"* *"Yes – I mean there is always something about being in a place where something happened. It feels different"* *"I can see like Mrs Hubbard lying there, you can kind of imagine those things happening – I think that's really really important about being on site"* *"(Importance of being on site) it makes history more real"* *"OK so there's trees and a big green area, somebody doing yoga in the corner but actually I can visualise what it might have looked like I can visualise there actually being a fence in front of me and there would be, the ground would be torn up because the horses have ridden over it and I'd be able to smell the things I'd be able to smell food – I could certainly smell beer"* *"It's the physicality of it. It stops being an antiseptic experience and it becomes a real thing. You know – we had to look to make sure we didn't step in dog pooh, like anybody else in that period who was there are the time, might have been horse pooh. That's real and the space is real"* *"It was nice thinking that actually cause it was September that that was went the races would have been and sort of in a way it made me think – oh it's a bit more like an authentic experience of sort of being at the races"*

		"We get a feeling of the space and the size of it. When you are here all you can get is what's in your head already, even though I know Victoria Park what's in my head would not equate to what we did" *"For me I think that was pretty important, so on a scale of 1 to 10 I would say that was about an 8 to a 9 it was much more for me – that sense of place – and actually being there, seeing it and being able to look round, and look at this for me that was really important"* *"No I don't think it would have been, well, I'm confident it wouldn't have been. Somehow there is a spirit of the history of the place, the racing and the people and the experiences of people which is there and even though the races have gone to Oadby I think somehow, being there in the park and having the whole thing related to you would somehow link in with the spirit of the occasion"* *"I'm a great believer in having access to stuff like that when you are physically in the space – it's a much more memorable experience"*
SUB THEME 25 Connection to Place		
Core Theme	Description	*Participant comments*
23 Participant Relationship with Park	The experience has made the Park more interesting for the visitor	*"Much more interesting – well having been aware of Vicky Park for playing cricket on it over the years, and playing football on it over the years and now running round it, its recreational for me but there's so much more to it that I was just not aware of, and interesting things, like death and different sports, and riots and things like that"* *"I hadn't appreciated it was a race course, and it makes it a more interesting space"*

Table 7-29 KT04 place (Wilkinson, 2018)

7.1.5.5 Key theme 5 visitor

Key theme five relates to the visitor behaviour and processing during the visit and is divided into two sub themes and five themes. Details of these core themes follow with examples of some contextual quotations to illustrate (table 7.30 pp 7-358 to 7-360)

Sub Theme	
26 Behaviour	Codes describe and explain what participant were doing during the visit in terms of walking, sitting and looking.
27 Processing	The ways in which participants were processing information: visualising, thinking and imaging during their visit.

SUB THEME 26 Behaviour		
Core Theme	Description	*Participant comments*
22 Participant Behaviour on Visit	Visitors value time to sit and think, to listen and to walk and to visualise	*"Just sitting there and thinking about what has happened here it makes it more realistic and as if history kind of gives you a little bit back and comes to life"* *"There is a certain amount of interest in following a story as you are walking round that's helping in understanding some of it in some ways"* *"they'd have been freezing and the woman that was singing was singing in the middle of field full of mud in a rainstorm – hardy people, hardy hardy people"* *"that brings it into sharp focus because basically you're looking at it because of the information that you've been given. Because the information that you've been given is there that brings you to look at things more intently"* *"there's no doubt that the information that's provided makes you look more thoroughly at the actual park to determine the lie of the land"*

SUB THEME 27 Processing		
Core Theme	Description	*Participant comments*
26 Hearing/Imagining	During the visit people were listening and imaging	*"Loads of just noise from lots of people, sort of talking going off at different times all the time and then sort of when the horses– cause the race course went all the way around the park actually, quite often when they are actually racing you'd be able to hear the horses all sort of galloping (bangs hands on table) along, but also then the cheers of all the crowd all sort of cheering people on and stuff as well"* *"I liked the sound effects, so I liked the stereo horses going past your ears – I want more horses – and I liked the crowd noise and things like that, I thought that was…it helped bring the atmosphere in because you could cut our where you were at the time and superimpose upon it what it would have been like, so I was finding myself listening to the stories, not seeing the park but seeing the park in the story."*
35 Imagining	Visitors use the content of the prototype app to help them imagine themselves at the races	*"and I imagine if its anything like what they do nowadays when there's events at Victoria Park I'd arrange to meet somebody at or near a beer tent"* *"I'd have been trying my arm at the various stalls and stuff. I might have had a bit of a wager on one of the races but I don't think I'd have been, I don't think I'd necessarily have been an active participant"* *"I'd want to be near the noise for the race itself just to kind of get the atmosphere, get the experience cause it does sort of – immersive"* *"Oh – I wouldn't have been rich enough to have been in the grandstand – I think probably slightly on the edge of the crowd, not wanting to be pushing and shoving in the middle"* *"as I am now I would probably have been sitting up there on a seat somewhere, had I been younger I would have been in the crowd, seeing, watching, you know"*
		"that there are certain things – especially with that one, cause you can see it there – so like when you are reading about it you read the inscriptions, you read what's inscribed on it and you read what' inscribed on it and you look up at the inscriptions there, and you're like 'oh there are no names written on it' cause you just read, and then you can actually see there's no names written on the inside – some part of me always thought there would be names written on the inside or something"

30 Thinking/processing on location	Visitors use the content of the prototype app to help them think about the races and the park	*"I think the – like when you mentioned about St James the Greater not being there or just being a sort of tiny little wooden shack and actually how some of the buildings… how the park actually fits into the rest of the city and stuff and so the fact that the asylum was there and so what that's been turned into know and then that the hospital was there, and this was sort of on the edge of all of that but sort of, so there was just something about how it was just sort of fields and there was like windmills and stuff just around but actually there was still some recognisable parts of the City but actually other bits, like St James the Greater I just sort of thought that had been there for like donkey's years – um so just how it fits in in context with the rest of the history and the rest of the city it was really interesting."* *"I enjoyed putting the war memorial in place"*
25 Visualising	Visitors use the content of the prototype app to help them visualise the Park whist on location.	*"on site it's really good because like we said before about the horses – I can picture them riding around"* *"I think it is quite important to go out on location to see it because then you can actually visualise where it is better, especially the bend where Mrs Hubbard was hit"* *"Has this (the App) helped you to make it more tangible...Oh yes – definitely – I use that rather hackneyed phrase – brought history to life, yes it has a bit, one because I learned more about the history of the location, two because it helped me imagine and picture what it would have been like, so yes –definitely –it has helped."*

Table 7-30 KT05 Visitor-sub themes, core themes and sample comments (Wilkinson, 2018)

7.1.6 Analysis of results

The quantitative and qualitative results of the evaluation study were analysed in order to answer the three issues outlined in section 7.1.1, page 7-323, relating to engagement, the Guide and the importance of being on location. To answer these questions a series of supporting queries were used to explore the data and reach conclusions.

7.1.6.1 Visitor Engagement (RQ9)

Query 1.1: Has the participant experienced an increase in their engagement with the cultural heritage across all four *stages* of the engagement framework?

To answer this query the quantitive data results from Q15 were analysed, figure 7-7 page 7-361. Results show that the majority of participants reported positive experiences in attraction, absorption, disengagement and extended engagement, confirming that the prototype is successful in facilitating and supporting visitor engagement all four stages of the framework.

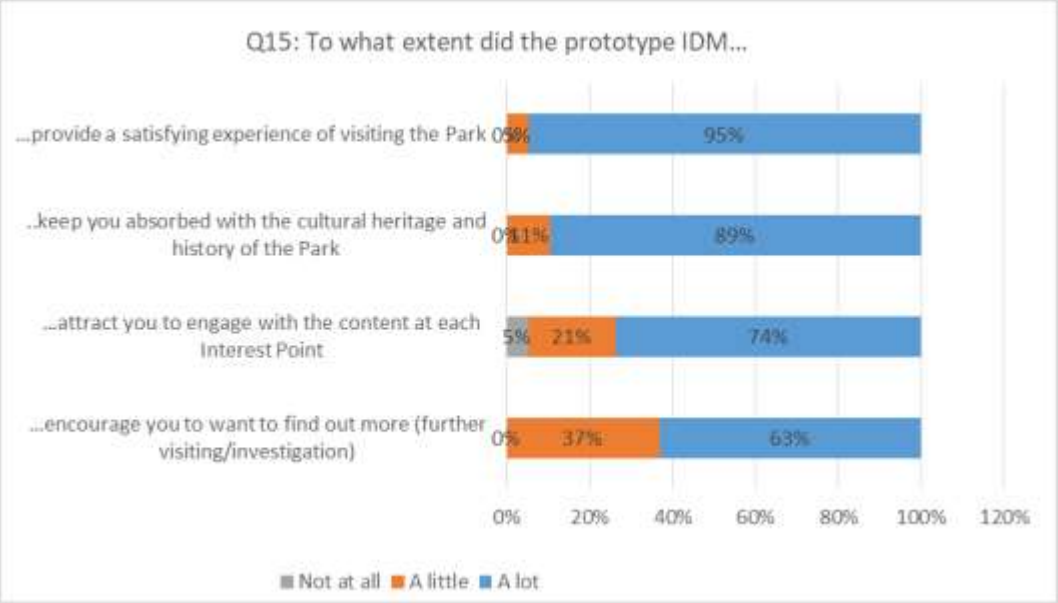


Figure 7-7 Q15 stages of engagement (Wilkinson, 2018)

Query 1.2: Has the participant experienced an increase in their engagement with the cultural heritage across the engagement *states* as described in the framework?

The quantitive data results from Q14 and the Engagement Wheel analysed. Q14 explores nine of the states of engagement outlined in the guidance: *understanding, empathising* (feeling and emotional connection) *enjoying, curious, attracted, connected,* extended engagement *interest* (continue discovering), *inspired* and *interested*. Results from Q14 confirm that the majority of participants reported positive experiences of engagement in all nine *states of engagement*, figure 7-8 page 362.

The Visitor Engagement Wheel includes measures on eight of the *states of engagement*: *interested; curious; connected; inspired; involved; immersed* (absorbed and attentive) *attracted* and *enjoying*. Results from the Visitor Engagement Wheel confirm that for each of these states more than 40% of participants reported an increase in the intensity with which they experienced that particular engagement state and for most states more than 50% reported an increase in intensity. Figure 7-9 page 362 illustrates these findings.

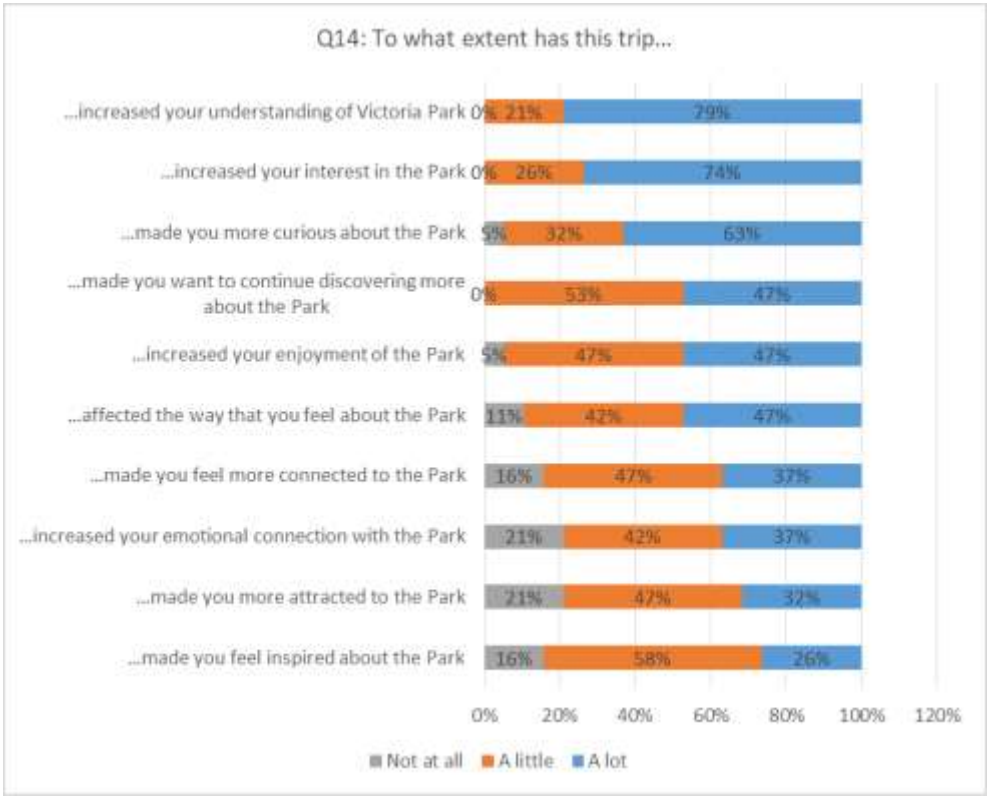


Figure 7-8 Q14 states of engagement (Wilkinson, 2018)

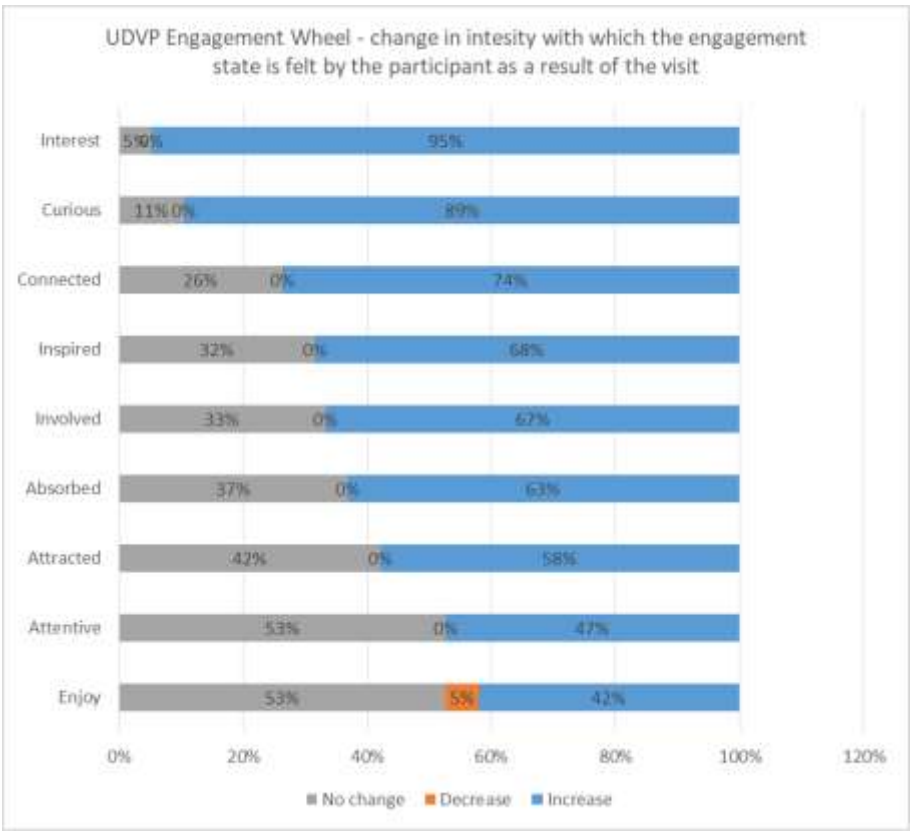


Figure 7-9 Visitor Engagement Wheel (Wilkinson, 2018)

Query 1.3: To what extent has using the prototype interpretive digital media impacted visitor engagement across the following *stages* of engagement: attraction, absorption; disengagement and extended engagement?

To further explore the extent to which engagement has been achieved across all four stages of the framework the results from five sources within the study were analysed: the quantitive data results from Q14, Q15 and the Visitor Engagement Wheel; and the qualitative core themes identified from the free text answers and interview transcripts.

Engagement Stage One: Attraction: In terms of attraction 95% of participants indicated that the prototype had a positive impact on attracting them to *'engage with the content at each Point of Interest'* and subsequently with the cultural heritage of the location during the field test visit. 74% indicated that the extent of this attraction had been *'a lot'*, figure 7-7 page 7-361. Results from the Visitor Engagement Wheel also indicate high levels of attraction, with 58% of participants indicating that their level of attraction to Victoria Park had increased in intensity as a result of the field visit, figure 7-9, page 7-362. 79 % of participants indicated that the field trip had made them feel '*more attracted to the Park'*, with 32% of participants indicating that the extent of this increase had been *'a lot'*, figure 7-8 page 7-362.

High levels of increase in attraction, above 50%, suggest that the prototype is successful in developing stronger attraction to the location and the heritage. It should be noted that the results for *attraction* demonstrate a lower level of increase than for the other stages of engagement. One possible explanation for this is that most participants were already highly attracted to the Park and its history, as evidenced by CT04 *'Familiarity and regularity'*, CT06 *'Attraction to the Park'* and CT07 *'Nature'*. Participants have a fond and familiar relationship with the park. Even those who live further away feel some degree of connection with the location. People visit the park frequently and, for some, it has become an almost invisible part of their daily landscape. People have a strong attraction to the park describing it as nice, beautiful and part of being at home. Nature and being outdoors is highly valued. The Park is valued for being green, open and a place for fresh air.

"Everyone knows Vicky Park."

"The trees are beautiful and it's lovely to watch the seasons change in the park….from the bulbs in spring to the leaves changing in the Autumn."

"Oasis in the city, Green space and 'clean' air. An interlude on the way to town."

Engagement Stage Two: Absorption: In terms of *absorption* 100% of participants indicated that the prototype had a positive impact on keeping them '*absorbed with the cultural history and heritage of the Park'* during the field test visit. 89% indicated that the extent of this attraction had been *'a lot'*. Results from the Visitor Engagement Wheel also indicate high levels of absorption, with 63% of participants indicating that their level of absorption with Victoria Park had increased in intensity as a result of the field visit. High levels of increase in absorption, above 50%, indicate that the prototype is successful in delivering an absorbing experience of the location and its associated heritage. CT28 *'Engagement'* and CT29 *'Absorption'* further endorse the quantitative results. The prototype product engages the visitor by providing an absorbing experience which creates interest, holds attention and is evocative. The prototype product provides an absorbing and immersive experience.

"it helped bring the atmosphere in because you could cut our where you were at the time and superimpose upon it what it would have been like, so I was finding myself listening to the stories, not seeing the park but seeing the park in the story."

"I think it's one of those things that takes you out of time for a little bit – so just for an hour we were pretending we were in like a different time and it was just a funny thing – like all the cars and traffic – in like 150 years ago – and thinking no this is what it was used for then so in a blink you were in a bit of a time hop…but it still feels like that hidden bit of that was there all along and you never know it – and the different layers – so if you started looking at the agricultural think that would be a different layer, this was the horses layer and then for different times there was different uses and ultimately most people will just look at the…"

Engagement Stage Three: Disengagement: Appropriate and effective *disengagement* was measured through the extent to which the participants felt satisfied with their experience. In terms of *satisfaction* 100% of participants indicated that the prototype had a positive impact in providing them with '*a satisfying experience of visiting the Park'*. 95% indicated that the extent of this satisfaction had been '*a lot'*, figure 7-7 page 7-361. High levels of increase in satisfaction, above 50%, indicate that the prototype is

successful in creating a satisfying experience of engagement with the location and the heritage sufficient to support effective and appropriate disengagement upon completion of the visit. CT33 *'I feel pleased/satisfied'* further endorses the quantitative results. The prototype provides a satisfying experience.

Engagement Stage Four: Extended Engagement: The *extended engagement* stage was explored through questions relating to wanting to *'find out more'* and to *'continue discovering'*. In terms of extended engagement 100% of participants indicated that the prototype had a positive impact encouraging them to *'find out more (further visiting/investigation)'*. 63% declaring that the extent of this had been *'a lot'*, figure 7-7, page 7-361. 100% of participants stated that the field trip had made them *'want to continue discovering more about the Park*', with 47% of participants indicating that the extent of this increase had been *'a lot'*. High levels of increase in wanting to *'find out more'* and to *'continue discovering'*, above 50%, suggest that the prototype is successful in stimulating *extended engagement* with the location and the heritage. CT13 '*Inspired to engage further'* endorses the quantitative results. Visitors were inspired to engage further with the Park by independently exploring more information and sharing what they have learned with others.

> *"Want to go again – yes I want to find out more about it"*
>
> *"thought-provoking, cause I hadn't thought about the history of the park like that before so now I'm thinking, ohh I wonder what else was on the park which I don't know about now"*

Rich and deeper levels of engagement with the location and its cultural heritage are experienced across the engagement states when using the interpretive digital media prototype.

Query 1.4: To what extent has using the prototype impacted visitor engagement across the following *states* of engagement: curiosity; attraction; interest; learning; understanding; empathy; enjoying, immersion, connection, satisfaction and inspiration?

To further explore the extent to which engagement has been achieved across the included *states of engagement* results from various sources within the study were

analysed: the quantitive data results from Q12 (figure 7-10 below), Q13 (figure 7-11 below) and Q14 ; the quantitive data results from the Geneva Emotion Wheel; the quantitive data results from the Visitor Engagement Wheel and the qualitative core themes identified from the free text answers and interview transcripts.

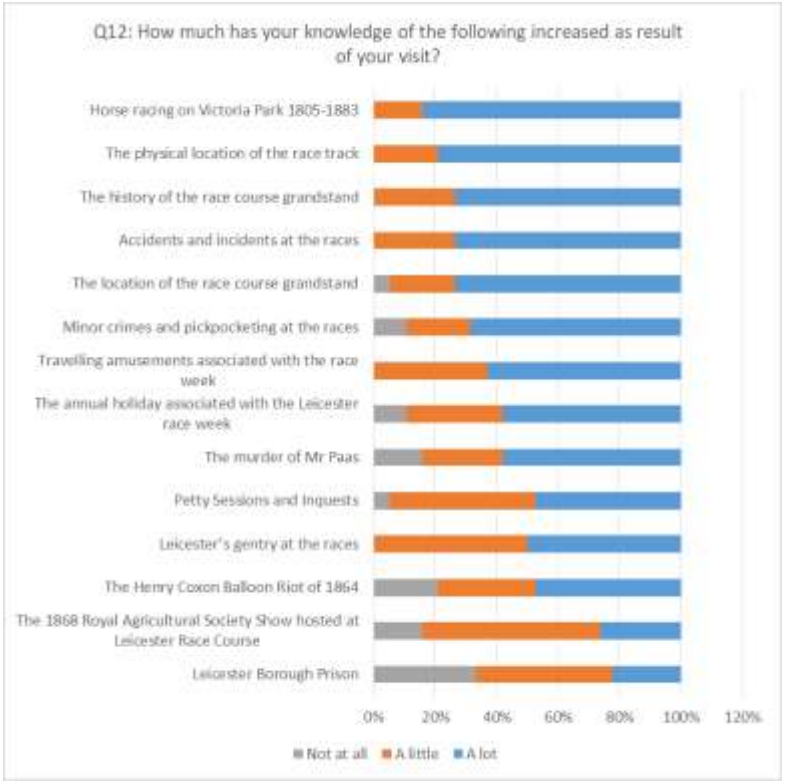


Figure 7-10 Knowledge increase history (Wilkinson, 2018)

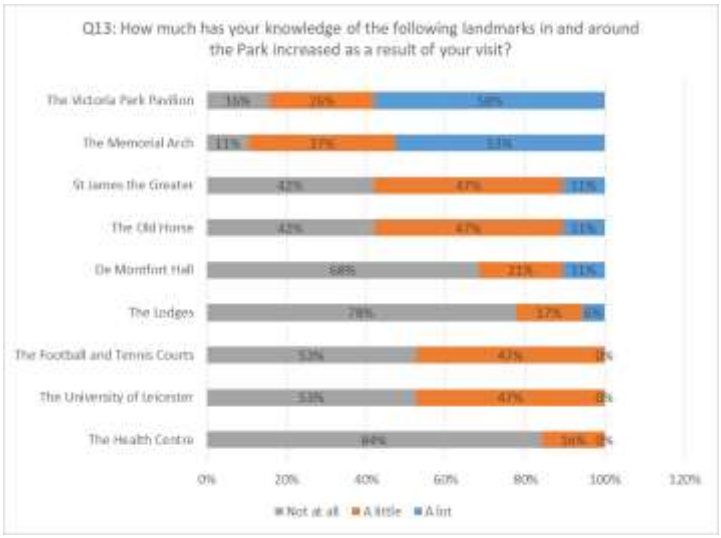


Figure 7-11 Increase knowledge landmarks (Wilkinson, 2018)

Curiosity: In terms of *curiosity* 95% of participants stated that the prototype had a positive impact on making *them 'more curious about the Park'* during the field test visit. 63% indicated that the extent of this had been '*a lot'*. Results from the Visitor Engagement Wheel also indicate high levels of curiosity, with 89% of participants reporting that their level of *curiosity* in relation to Victoria Park had increased in intensity as a result of the field visit. These levels of increase for *curiosity* are amongst the highest found in the data suggesting that the prototype is successful in making the visitor curious about the location and its associated heritage. CT55 *'Curiosity'* further endorses the assessment of the quantitative results. Visiting the Park with the app inspires people and makes them more curious.

> *"… if the opportunity arrived to find some supplementary information it would be …if I saw something in the bookshop or whatever I would pick it up and consider buying it – if there was something say about the Royal Show – if somebody happened to write a book about it – it would make me more likely to pick it up and take a look at it"*
>
> *"It's encouraged my knowledge and my interest and I would like to go and learn more – it's wetted my appetite and I think from there I would want to know more about Leicester"*

Attraction: Results from the Visitor Engagement Wheel suggest a good increase in levels of *attraction*, with 58% of participants reporting that their level of attraction to Victoria Park had increased in intensity as a result of the field visit 79% of participants stated that the field trip had made them feel '*more attracted to the Park'*, with 32% of participants indicating that the extent of this increase had been *'a lot'.* High levels of increase in *attraction*, above 50%, suggest that the prototype is successful in developing stronger attraction to the location and the heritage. It should be noted that the results for this stage demonstrate a lower level of increase for attraction than for the other stages of engagement. One possible explanation for this is that most participants were already highly attracted to the Park and its history, as evidenced by CT04 *'Familiarity and regularity'*, CT06 *'Attraction to the Park'* and CT07 *'Nature'*. Participants have a fond and familiar relationship with the park. Even those who live further away feel some degree of connection with the location. People visit the park frequently and, for some, it has become an almost invisible part of their daily landscape. People have a strong attraction to the park describing it as nice, beautiful and part of being at home. Nature and being

outdoors is highly valued. The Park is valued for being green, open and a place for fresh air.

Interest: 100% of participants reported that the prototype had a positive impact on increasing their '*interest in the Park'* during the field test visit. 74% stated that the extent of this had been '*a lot'*. Results from the Visitor Engagement Wheel also demonstrate high levels of *interest*, with 95 % of participants indicating that their level of *interest* in relation to Victoria Park had increased in intensity as a result of the visit. Figures for the Geneva Emotion Wheel are also high with 78% of participants reporting an increase in the intensity which they felt interest for the Park (table 7-17 and figure 7-12 below) These levels of increase are amongst the highest found in the data suggest that the prototype is successful in making the visitor interested in the location and its associated heritage.

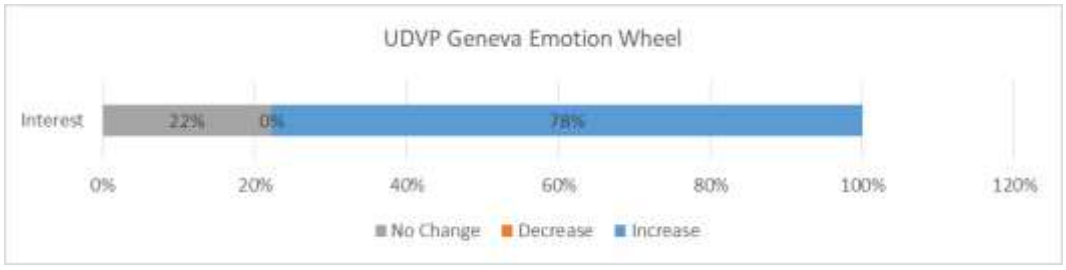


Figure 7-12 Geneva Engagement Wheel interest (Wilkinson, 2018)

Learning: A significant degree of learning is reported by participants stating that their knowledge of the historical features associated with the Park and the races had increased. The highest levels increase were in features which have a direct link to the races for example, the location of the racetrack, the history of the grandstand and the accidents and incidents at the races. Over 70% of participants reported that their knowledge of these features had increased *'a lot'*, the largest example being 84% indicating that their *'knowledge of the horse racing on Victoria Park between 1805 - 1883'* had increase a lot. The historical features with the lowest levels of knowledge increase were those which are either not related to the races, or did not take place on the Park and include the Henry Coxon Balloon Riot of 1864, the 1868 Royal Agricultural Society Show hosted at Leicester Race Course and Leicester Borough Prison.

Increases in knowledge regarding the local landmarks are identified, but to a lesser extent. The highest of these are the Victoria Park Pavilion, the only landmark directly associated with the races, and the Memorial Arch, the largest and most obvious built structure on the park, both of which featured in the app and in the additional digital content and formed part of the field visit. Unsurprisingly there is little increase in knowledge regarding the Health Centre as this landmark was not visible during field visit and is the farthest of all landmarks from the route of the visit.

CT14 *'Reported areas of Learning'*, CT57 *'The importance of knowing'* and *CT56 'Increased recall'* further endorse the assessment of the quantitative results. The prototype supports a broad range of learning. Participants reported learning about events, the park and local buildings. Those who already knew quite a lot reported learning more. Significant surprise was expressed as to how much more there is to the Park than they realised before the visit and how much they didn't actually know (even though they thought they had). Knowing more about the Park is considered to be important. Associating the experience of visiting the park with the content can increase recall of the information.

"So until we went round the park I had no idea that it was a, that it had been used for racing, no idea of that period of history at all, in fact as we just said before we started recording, I guess conceptually in my head I'd imagined Victoria Park almost popping into existence in the 40s or 50s as a kind of post war – ooh – shared space let's make something nice for people who have come back from after a terrible period"

"Much more interesting – well having been aware of Vicky Park for playing cricket on it over the years, and playing football on it over the years and now running round it, its recreational for me but there's so much more to it that I was just not aware of, and interesting things, like death and different sports, and riots and things like that"

"it's now got an added element and I'm pretty sure that I'm gonna hear hooves when I go through it in the future."

"I think it's very positive – something I've said with friends in conversation in the past – so many people don't know very much about the history of the place they live – they often know so very little about it. A small minority of people who have an interest will delve and find out but many don't. I think – I suppose – does that matter? It matters to me. I think it matters."

"I think now I've heard it through the app I'll probably remember it a bit better actually – cause I'll be able to associate the memory with putting the app on rather than just a rather anonymous talk or book that I've read"

Understanding: 100% of participants indicated that the prototype had a positive impact on increasing their *'understanding the Park'*. 79% indicated that the extent of this had been *'a lot'*. CT21 '*Interpretation/Understanding the Races'*, CT18 *'Participant*

understanding the Park' and CT44 *'Understanding the historical context'* further endorse the assessment of the quantitative results. The prototype enables visitors to build a rich colourful picture of the races and the events surrounding the race week which is demonstrated by the ability to imagine oneself at the races and describe this in detail. The prototype increases visitor understanding of the Park, particularly in relation to its importance to the people of Leicester, its role as a gathering place, its continuing contribution and relevance to the City and the different used over time. The prototype product helps the visitor to understand and appreciate the historical context for the Park by illustrating how things have changed and developed over time.

"Well I was thinking it would depend whether I was affluent and I was there to actually be participating in it or whether I was there to pickpocket in which case it would be very nice to dress up, be sort of in all your finery and to be part of watching races, where as if you didn't have any money I think it would just be lots of noise and just quite a stressful situation of trying to see where you were likely to get to."

"I'm wandering round the beer tents. I might be eyeing the pretty ladies – I'm imagining that I'm a lot younger than I am now and not married, so eyeing the pretty ladies, I'd have been trying my arm at the various stalls and stuff"

"Ohh – I think it would have been a spectacle, and I think lots of people from Leicester city would have gone and it would have been quite hustling and bustling and a mix of classes"

"gives you the idea that the park keeps changing its uses, keeps changing from just being what would be almost like an agricultural area into.. it almost being a field into what it is now – and that gives you the idea that even what's happening now is just change again"

"just a very obvious connection of how the city's changed … the idea that it *[the sunrise shining through the Memorial Arch on the 11th November]* worked in 1924 but it doesn't work now, like the original conception worked but because – either the trees have grown or the buildings have been put there it *doesn't quite work any more"*

Empathy: Results from the Visitor Engagement Wheel confirm an increase in levels of *empathy*, with 37% of participants reporting that their level of empathy towards Victoria Park had increased in intensity as a result of the field visit. CT47 *'Empathy'* and CT11 '*Emotional response'* endorse this finding. Empathy is created when visitors experience emotional connection with a person's story. A range of different emotional responses are experienced including feeling proud to live by the park, being fascinated by the experience, interested in the stories, empathetic with the characters and enjoyment of learning about the past and walking the route of the race course. People also described sadness at the disappearance of the race course and the buildings associated with it.

"it just allows you to feel that person's story"

"you then have sympathy for his mum"

"I really enjoyed learning about the people and the events at the park, rather than the facts and figures about the structures"

Enjoying: 95% of participants indicated that the prototype had a positive impact on increasing their '*enjoyment of the Park*' during the field test visit. 47% indicated that the extent of this had been '*a lot*'. Results from the Visitor Engagement Wheel also indicate an increase in levels of *enjoyment*, with 42% of participants indicating that their level of enjoyment of Victoria Park had increased in intensity as a result of the field visit. CT11 *'Emotional response'* provides further information on the levels to which participants experienced enjoyment. A range of different emotional responses are experienced including feeling proud to live by the park, being fascinated by the experience, interested in the stories, empathetic with the characters and enjoyment of learning about the past and walking the route of the race course.

"I enjoyed the individual stories which made it more 'alive'. I enjoyed walking the course. It made the park more than an open space"

Immersion: There are no direct quantitative measures for the levels to which participants felt immersed in the field visit and with the cultural heritage of Victoria Park, however, qualitative measures indicate good levels of immersive experience as evidenced in CT28 '*Engagement*', CT29 '*Absorption*' CT12 '*Making a Connection*' and CT26 '*Hearing/Imagining*'. The prototype product engages the visitor by providing an absorbing experience which creates interest, holds attention and is evocative. The prototype product provides an absorbing and immersive experience. Participants commented on how the visit brought history to life, particularly through the imagery, the stories and the characters involved.

"Um – it gives you time to ...listen to something and not get distracted…it was almost like meditation thing, you're listening to something and just being away from other distractions it just allows you to feel that person's story, perhaps know that you are on the same ground as them..like um"

"I can visualise people actually, you know, people on the park actually doing things, watching, dying (!)"

"…it helped bring the atmosphere in because you could cut our where you were at the time and superimpose upon it what it would have been like, so I was finding myself listening to the stories, not seeing the park but seeing the park in the story."

Connection: In terms of *connection* 84% of participants reported that the prototype had a positive impact on making them feel '*more connected to the Park'* during the field test visit. 37% indicated that the extent of this had been '*a lot*'. Results from the Visitor Engagement Wheel also indicate high levels of *connection*, with 74% of participants indicating that their level of connection with Victoria Park had increased in intensity as a result of the field visit. These levels of increase for connection are amongst the highest found in the data suggesting that the prototype is effective in creating a strong connection between the visitor and the location.

"I felt proud that I live by it and walk through it."

"It was fascinating to discover all the local history tied up in the park. The colourful characters, the colour and life – the horrific stories – poor Mrs Hubbard – placing that in the context of the races – brings that time to life – looking at the old pictures of the buildings and the views of Leicester at the time help you picture what it would have been like"

"although things have changed there are still things where you can put yourself in the context and having the stories it sort of brings things to life"

"whereas what we are talking about here is a long period of cultural history and what you get through there = - you get the history of it – you get how it developed through the movement of the racecourse, about the development of new buildings about incidents, stuff like that but all of that puts it into the context of 19th century people have got an image of and so when you take the stuff that the app gives you which is stories, scenarios, um bits of colour you can build a much more effective picture from that"

"I knew it had been a racecourse and I hadn't really pictured the extent of racecourse within the park ground so I didn't realise it was as extensive as it was – right round the edge of the park, but I suppose I'd never really pictured it, I'd never really imagined"

CT11 '*Emotional response'*, CT12 *'Making a connection'*, CT16 *'Connection – sense making'* and CT23 *'Participant relationship with the Park'* further endorse the assessment of the quantitative results. A range of different emotional responses are experienced including feeling proud to live by the park, being fascinated by the experience, interested in the stories, empathetic with the characters and enjoyment of learning about the past and walking the route of the race course. People also described

sadness at the disappearance of the race course and the buildings associated with it. Participants commented on how the visit brought history to life, particularly through the imagery, the stories and the characters involved. Being on the spot where things actually happened deepened the connection and the overall experience. Using the prototype enables visitors to relate the historical events of the Park to their own lives and contemporary experiences, allowing them to make their own meaning and interpretation of the cultural heritage. Using the prototype has made the location more interesting to the visitor and subsequently improved the visitor's relationships with the location.

Satisfaction: In terms of *satisfaction* 100% of participants indicated that the prototype had a positive impact in providing them with *'a satisfying experience of visiting the Park'*. 95% indicated that the extent of this satisfaction had been *'a lot'*. High levels of increase in satisfaction, above 50%, indicate that the prototype is successful in creating a satisfying experience of engagement with the location and the heritage sufficient to support effective and appropriate disengagement upon completion of the visit. CT33 *'I feel pleased/satisfied'* and CT60 '*Purpose'* further endorses the quantitative results. The prototype provides a satisfying experience. Conducting the visit with the prototype provides a sense of task and purpose.

Inspiration: 84% of participants indicated that the prototype had a positive impact on making them '*more inspired about the Park'* during the field test visit. 26% indicated that the extent of this had been '*a lot'*. Results from the Visitor Engagement Wheel also indicate high levels of *inspiration*, with 68% of participants indicating that their level of inspiration regarding Victoria Park had increased in intensity as a result of the field visit. These levels of increase for inspiration are the fourth highest found in the data and indicate that the prototype is successful in making the visitor inspired about the location and its associated heritage. CT13 *'Inspired to engage further'* endorses the assessment of the quantitative results. Visitors are inspired to do this by independently exploring more information and sharing what they have learned with others.

"As we were walking round I was thinking I can't wait to bring the boys and Dan here and go – this is where this happened – like there is something about standing on a spot where somebody stood before you and seeing the same view"

Rich and deeper levels of engagement with the location and its cultural heritage are experienced across the engagement states when using the interpretive digital media prototype. High levels of intensity appear to occur with the cognitive engagement states, such as understanding and curiosity and slightly lower levels with the emotional engagement states such as enjoy. This corresponds with the planning decisions and subsequent design of the prototype which intentionally focusses on content and historical information to support learning and understanding rather than gamification and amusement which would support fun.

Analysis of results concludes that interpretive digital media does engage the visitor with the cultural heritage location and that increased levels of engagement are identified across all stages and states of the framework. The intensity of the engagement is demonstrated as being strong supporting the argument that the engagement achieved with the prototype interpretive digital media is richer and deeper than the engagement reported prior to using the app.

7.1.6.2 The Guide (RQ10)

To explore this research question five further queries are considered

Query 2.1: Do the design decisions made using the Guide regarding presentation methods for the content contribute to visitor engagement?

To answer this query the quantitive data results from Question 11 were analysed. Three key presentation methods were assessed, watching the videos (visual), reading the articles from the Leicester Chronicle (text) and listening to the stories (audio). Results confirm that all methods were highly successful in helping the visitor to appreciate the history of the races on the Park.

Watching the videos and listening to the stories are the most helpful methods of content delivery, both being considered as '*very helpful*' by over 70% of the responses.

Interestingly this contradicts the findings of the Visitor Interest Survey in which respondents expressed concern about watching videos outside and the potential high usage of data. The data usage issue was negated through the use of pre-loaded content. It would appear that once that barrier was removed participants had no significant concerns about watching videos outside other than personal learning preferences. Design decisions made using the Guide regarding the presentation of the content in the prototype were successful in supporting visitor engagement with the heritage.

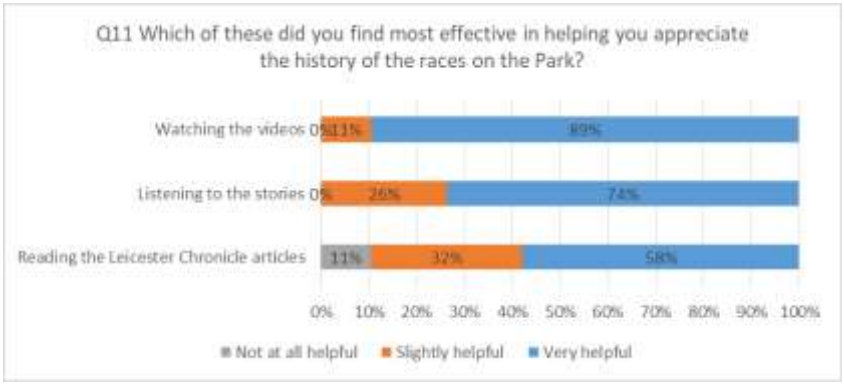


Figure 7-13 Content presentation methods (Wilkinson, 2018)

Query 2.2: Do the design decisions made using the Guide regarding content selection and design features contribute to visitor engagement?

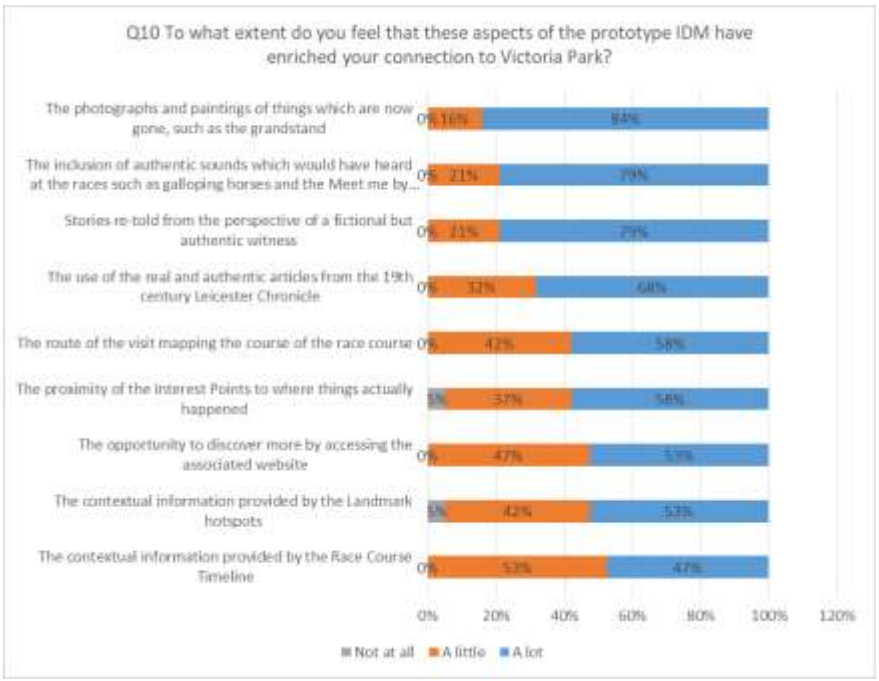


Figure 7-14 Design features (Wilkinson, 2018)

To answer this query the quantitive data results from Q10 were analysed. Seven design features were assessed: integrity of information; sense of place, contextual information, layering of information, meaning making, character and immersion, figure 7-14 page 7-375.

Results confirm that all methods were highly successful in contributing to visitor engagement with all bar two features successfully enriching the connection of a 100% of the participants.

Query 2.3: To what extent do the design decisions made using the Guide regarding presentation methods for the content contribute to visitor engagement?

To further explore the extent to which engagement has been achieved using the selected presentation method for the content results from three sources within the study were analysed: the quantitive data results from Q10 and Q11 and the qualitative core themes identified from the free text answers and interview transcripts..

Text: The use of text as a presentation method for content was explored by assessing answers to Question 10 and the extent to which use of the *'real and authentic articles from the 19th century Leicester Chronicle*' enriched visitor connection with Victoria Park. 100% of participants indicated that this design feature had a positive impact on enriching their connection with 68% reporting that the extent of this enrichment had been '*a lot'*

The use of text as a presentation method for content was also explored by assessing answers to Q11 and the helpfulness of '*reading the Leicester Chronicle articles'*. Results from Q11 are positive with 89% of participants reporting that '*reading the Leicester Chronicle articles'* was effective in helping them to *'appreciate the history of the races on Victoria Park'* and 58% saying that they '*found this very helpful*', figure 7-13 p 7-375. This is the lowest response of the all three methods content delivery. Reasons for this might be style of writing used in the Leicester Chronicle articles. Some participants commented that they considered the language to be old fashioned and consequently

difficult to understand, although other participants were delighted by the 19th century text and found it very interesting and amusing.

CT34 and CT39 '*The value of information'* and '*Value of authentic language'* endorse the assessment of the quantitative results providing further commentary on the usefulness and impact of presenting content In text. Visitors like to engage with facts. Those who already know something are pleased when they find out a little more. People enjoy being able to access as little or as much information as they want during their visit to the Park. The language from the original Leicester Chronicle reports is engaging, evocative and entertaining, although some found the language tricky to understand.

> *"my particular experience today was that we sit down, we get the initial paper Chronicle information etc and then you do the pictorial commentary – they are the factual stuff, I was very engaged doing that."*
>
> *"some of the language in some of the reports is brilliant cause, if you've got an imagination you can get a bit just carried away with the language*

Audio: The use of audio as a presentation method for content was explored by assessing answers to Question 10 and the extent to which '*the inclusion of authentic sounds which would have been heard at the races'* enriched visitor connection with Victoria Park. 100% of participants indicated that this design feature had a positive impact on enriching their connection with 79% reporting that the extent of this enrichment had been '*a lot'*. The use of audio as a presentation method for content was also explored by assessing answers to Q11 and the helpfulness *of 'reading the Leicester Chronicle articles'*. Results from Question 11 are positive with 100% of participants reporting that *'listening to the stories'* was effective in helping them to '*appreciate the history of the races on Victoria Park'* and 74% reporting that they '*found this very helpful'*. CT20, CT26, CT37 and CT51 '*Value of audio media'*, '*Hearing/imagining'*, '*Value of narration'* and '*Value of sound*' endorse the assessment of the quantitative results providing further commentary on the usefulness and impact of presenting content in an audible format. People like listening to things, especially as they walk. The sound content provides context and helps people to imagine the events being described. During the visit people were listening and imaging. Use of first person and 'real time' narrative creates a feeling of

being there when the event is happening, which in turn supports the immersive experience. The sounds are effective in creating atmosphere and supporting an immersive experience.

> *"I like the narrative stories as well because that allowed you to absorb the information whilst being mobile"*
>
> *"I liked the sound effects, so I liked the stereo horses going past your ears – I want more horses – and I liked the crowd noise and things like that, I thought that was…it helped bring the atmosphere in because you could cut our where you were at the time and superimpose upon it what it would have been like, so I was finding myself listening to the stories, not seeing the park but seeing the park in the story."*
>
> *"It sounds like a genuine voice- it's a racing scene – maybe its all just caught up in the excitement of that and you actually feel like you are leaning on the post with these women and the horses are coming at you and you're thinking – why haven't you turned and seen Mrs Whatsaname wander off? (You've read the story cause you know what's going to happen) yeah your kind of invested even though it happened a hundred and whatever years ago I'm thinking 'why don't you turn round' – there was a slight element – I think I did the old suspension of disbelief!"*

Visual: The use of visual images as a presentation method for content was explored by assessing answers to Q10 and the extent to which the use of '*photographs and paintings of things which are now gone'* enriched visitor connection with Victoria Park. 100% of participants indicated that this design feature had a positive impact on enriching their connection with 84% reporting that the extent of this enrichment had been '*a lot'*. The use of video and animation as a presentation method for content was also explored by assessing answers to Question 11 and the helpfulness of '*watching the videos'*. Results from Q11 are positive with 100% of participants reporting that '*watching the videos'* was effective in helping them to '*appreciate the history of the races on Victoria Park'* and 89% saying that they '*found this very helpful'.* This is the highest response across all three methods of content delivery.

> *the fact that we have got the video and the stories being told has opened up the whole thing, illuminated it all, just makes such a difference because it came alive."*

CT17 '*The value of visual media'* endorses the assessment of the quantitative results providing further commentary on the usefulness and impact of presenting content in a visual format. Videos and pictures help people to understand and visualise the history.

Query 2.4: To what extent do the design features included in the prototype impact on visitor engagement with the cultural heritage?

To further explore the extent to which engagement has been achieved by the design features included in the prototype results from two sources within the study were analysed: the quantitive data results from Q10 and the qualitative core themes identified from the free text answers and interview transcripts.

Integrity of information: was explored by assessing reactions to the use of the '*real and authentic articles from the 19th century Leicester Chronicle'*. 100% of participants indicated that this design feature had a positive impact on enriching their connection with the park. 68% indicated that the extent of this had been '*a lot'*. CT39 and CT40: '*The value of authentic language*' and '*Value of authentic content'* provide further information on the extent to which participants felt that their connection to the park had been enriched by this design feature. The language from the original Leicester Chronicle reports is engaging, evocative and entertaining, although some found the language tricky to understand. Authentic content and historical accuracy are important. Information is more powerful because it was real.

> *"I want to hear what they said in their own words."*
>
> *"cause it was historically accurate of what had happened – it wasn't 'imagine yourself at the racecourse' it was actual 'here's live events of something that was here and this is what happened to them so it was much more real than sitting at home trying to picture the races and reading exactly the same information."*
>
> *You knew it happened because you had it backed up with the newspaper reports and … you've got the documents behind it and you know that there's proof and research there."*

Sense of place: was explored by assessing reactions to the '*proximity of the Points of Interest to where things actually happened'*. 95% of participants indicated that this design feature had a positive impact on enriching their connection with the park. 58% indicated that the extent of this had been '*a lot*'. Sense of place was also explored by assessing reactions to the '*route of the visit mapping the course of the race course'*. 100% of participants indicated that this design feature had a positive impact on enriching their connection with the park. 58% indicated that the extent of this had been '*a lot'*. CT48

and CT50: '*Context of location'* and '*Value of navigation'* provide further information on the extent to which participants felt that their connection to the park had been enriched by this design feature. Being on location with the app provides relevance and aids connection to that location. Walking a route provides an overarching theme and purpose for the visit.

> *"I do think it's important, cause I do like to see things and you could see where it was, whereas I didn't really think about it too much when I was watching the video, I was just like, oh yeah, that'll just be the loop in Victoria Park but once we sat on the bench near the Moscow State Circus you could actually see – oh yeah – that's exactly where it would be. Yeah I think it was definitely important to be on location for things like that."*
>
> *"you could see where actually everything was, walking round, where the horses would be, like the actual race course."*

Sufficiency of information: was explored by assessing reactions to the use of the '*contextual information provided by the Landmark hotspots*'. 95% of participants indicated that this design feature had a positive impact on enriching their connection with the park. 53% indicated that the extent of this had been '*a lot'*. Being on location with the app provides relevance and aids connection to that location. CT34: '*The value of information'*, provides further details on the extent to which participants felt that their connection to the park had been enriched by this design feature. The prototype product provides historical context for the location which is considered important by the visitor.

> *"It wasn't overbearing in that sense and I think a lot of places/sites are overbearing to put so much in it at the same time."*

Layering of information: was explored by assessing reactions to the use of the '*opportunity to discover more by accessing the additional digital content'*. 100% of participants indicated that this design feature had a positive impact on enriching their connection with the park. 53% indicated that the extent of this had been *'a lot'*. CT34 and CT49: '*The value of information'* and '*The importance of visitor choice*', provide further information on the extent to which participants felt that their connection to the park had been enriched by this design feature. The prototype product provides historical

context for the location which is considered important by the visitor. Choice and options are important as they enable visitor to pick and choose and put themselves in control of the visit experience.

> *"I probably won't go home and look up the Leicester treadmill – cause I've got other things to do – but because it was there, because it was available, and I can go into it if I wanted to then it was good."*
>
> *"it's nicer having shorter bits that you can pick and choose which bits you want to listen to rather than having one thing that's just running on and on and on and you're more in control of which bits you want to listen to and you can pause it if you want to stop and have conversations and so it's nice the fact that it's more usable."*
>
> *"you can choose what suits your circumstances at the time, so if you were going for a dog walk by yourself you could just listen to all the audio bits and ignore the rest of it…another time if you were going to sit on the park for a bit cause it was nice weather and you felt like just getting some fresh air – so having those different options just gives you more choices more really."*

Mixed media presentation: was not specifically addressed through quantitative data, although queries 2.1 and 2.3 above both provide commentary on the effectiveness of use of audio, visual and text in presenting content. CT20, CT26, CT27 and CT51: '*Value of audio media*'; '*Hearing/imagining'*; '*Value of multiple experiences/media'* and '*Value of sound'*, provide further information on the extent to which participants felt that their connection to the park had been enriched by the mixed-media presentation of information. People like listening to things, especially as they walk. The sound content provides context and helps people to imagine the events being described. During the visit people were listening and imaging. Although the use of the report, the animation and the narrated stories was repetitive there is value in repeating the same story from a different angle as it reinforces the message. The sounds are effective in creating atmosphere and supporting an immersive experience.

> *"you had the sound of the horses rushing past and I don't know how many horses were in that but when you're reading the story about poor Mrs Hubbard it does actually make you go (sharp intake of breath) that would have been what was coming for her, went over her."*
>
> *"all three elements together fix it. It sort of reinforces it makes it real."*
>
> *"the funny thing about duplication I thought about as we were leaving was the duplication actually helps it to sink in. I actually quite like it cause I've taken away more memories than I otherwise would have done."*
>
> *"to some extent I liked the repetition, though it was a little bit annoying but I liked the repetition because I think, 'oh yes the grandstand was here wasn't it – which I perhaps hadn't picked up a previous time."*

Focus on the surrounding environment: was not specifically addressed through quantitative data. CT22: '*Participant behaviour on visit*' provides some details regarding the focus of participants during the visit and confirms that visitors were not distracted by the app and were able to remain focussed on the Park. Visitors value time to sit and think, to listen and to walk and to visualise.

> *"brings it into sharp focus because basically you're looking at it because of the information that you've been given. Because the information that you've been given is there that brings you to look at things more intently."*
>
> *"there's no doubt that the information that's provided makes you look more thoroughly at the actual park to determine the lie of the land."*

The immersive experience: was explored by assessing reactions to the use of the '*inclusion of authentic sounds which would have been heard at the races such as galloping horses and the Meet Me by Moonlight song'*. 100% of participants indicated that this design feature had a positive impact on enriching their connection with the park. 79% indicated that the extent of this had been *'a lot'*. CT20, CT29 and CT51: *'Value of audio media'*; *'Absorption'* and '*Value of sounds*', provide further information on the extent to which participants felt that their connection to the park had been enriched by this design feature. People like listening to things, especially as they walk. The sound content provides context and helps people to imagine the events being described. The prototype product provides an absorbing and immersive experience. The sounds are effective in creating atmosphere and supporting an immersive experience.

> *"I liked the sound effects, so I liked the stereo horses going past your ears – I want more horses – and I liked the crowd noise and things like that, I thought that was…it helped bring the atmosphere in because you could cut our where you were at the time and superimpose upon it what it would have been like, so I was finding myself listening to the stories, not seeing the park but seeing the park in the story"*

Strong characters: The inclusion of strong characters in the design was explored by assessing reactions to the use of the '*stories re-told from the perspective of a fictional but authentic witness'*. 100% of participants reported that this design feature had a

positive impact on enriching their connection with the park. 79% indicated that the extent of this had been *'a lot'*. CT24 and CT43: '*Value of stories*' and '*Value of dramatization'*, provide further information on the extent to which participants felt that their connection to the park had been enriched by this design feature. People connect with the stories. The dramatizations help visitor to imagine and understand situations. Stories enrich the factual information. Dramatization is evocative, holds attention and brings emotion to the material.

> *"I really liked the story about the thimble riggers and the light fingered gentry – as kind of a catch all for the pickpockets and the people with their dodgy stalls that the whipped away and you know they were away before they know they were there – all of that – that kind of 'Oliver Twist' element to it cause – you know it happened as a kind of thing – you know – bow street runners and all of that sort of business and you read about someone that actually got caught doing it, you read about their tricks, so the pricking the garter thing, you know – one way of getting away with it – drop your bit of fabric drop the pin – they'll never find it in the ground, you can say – 'not me guv'. I like that – I think because of the colour, its not just lovely, gentle, country folk, humble, that kind of thing having a jolly on the park, its real people."*

Meaning making: was explored by assessing reactions to the use of the *'photographs and paintings of things which are now gone such as the grandstand'*. 100 % of participants reported that this design feature had a positive impact on enriching their connection with the park. 84 % indicated that the extent of this had been '*a lot*'. CT17, CT25, CT30 and CT35 '*Value of visual media*'; '*Visualising*' '*Thinking and processing on location'* and '*Imagining*', provide further information on the extent to which participants felt that their connection to the park had been enriched by this design feature. Videos and pictures help people to understand and visualise the history. Visitors use the content of the prototype to help them visualise the Park whist on location, to help them think about the races and the park and to help them imagine themselves at the races.

Contextual information: was explored by assessing reactions to the use of the '*contextual information provided by the Race Course Timeline*'. 100% of participants indicated that this design feature had a positive impact on enriching their connection with the park. 47% reported that the extent of this had been '*a lot*'.

Indeed because of so many paintings in there – specifically the paintings. So the story about the boy being hit with the bow and arrow they are wearing distinctive clothing from the early 19th century as opposed to some of the sketches of the agricultural show where people were in the late Victorian period so the coats are of a similar shape and size but the top hats."

"Has this (the App) helped you to make it more tangible...Oh yes – definitely – I use that rather hackneyed phrase – brought history to life, yes it has a bit, one because I learned more about the history of the location, two because it helped me imagine and picture what it would have been like, so yes – definitely –it has helped."

"I think the – like when you mentioned about St James the Greater not being there or just being a sort of tiny little wooden shack and actually how some of the buildings… how the park actually fits into the rest of the city and stuff and so the fact that the asylum was there and so what that's been turned into know and then that the hospital was there, and this was sort of on the edge of all of that but sort of, so there was just something about how it was just sort of fields and there was like windmills and stuff just around but actually there was still some recognisable parts of the City but actually other bits, like St James the Greater I just sort of thought that had been there for like donkey's years – um so just how it fits in in context with the rest of the history and the rest of the city it was really interesting."

"Oh – I wouldn't have been rich enough to have been in the grandstand – I think probably slightly on the edge of the crowd, not wanting to be pushing and shoving in the middle."
(describing themselves at the races)

Query 2.5: To what extent has using the Guide to design the prototype improved the quality of the product's ability to engage the visitor?

To assess the impact of using the Guide comparison was made between the findings of Mobile Apps study and the Victoria Park study, with particular attention being paid to the achievement of engagement states and the usability of the product.

Engagement States: The Victoria Park prototype was designed to encourage *curiosity, interest, learning* and *understanding* and was most successful in increasing the intensity with which participants felt the following states of engagement: *Curious*; *Interested* and *Inspired*. By comparison the Sounds and Stories apps were less effective in impacting these particular states Figures 7-15, 7-16 and 7-17 pp 7-385 and 7-386, illustrate the movement in intensity reported for *Curiosity, Interested* and *Inspired* for all three products showing the amount and direction of change from D6 (the maximum amount of decrease) through no change (nc) to I6 (the maximum amount of increase). A full account of these findings from the preliminary studies are reported in chapter four.

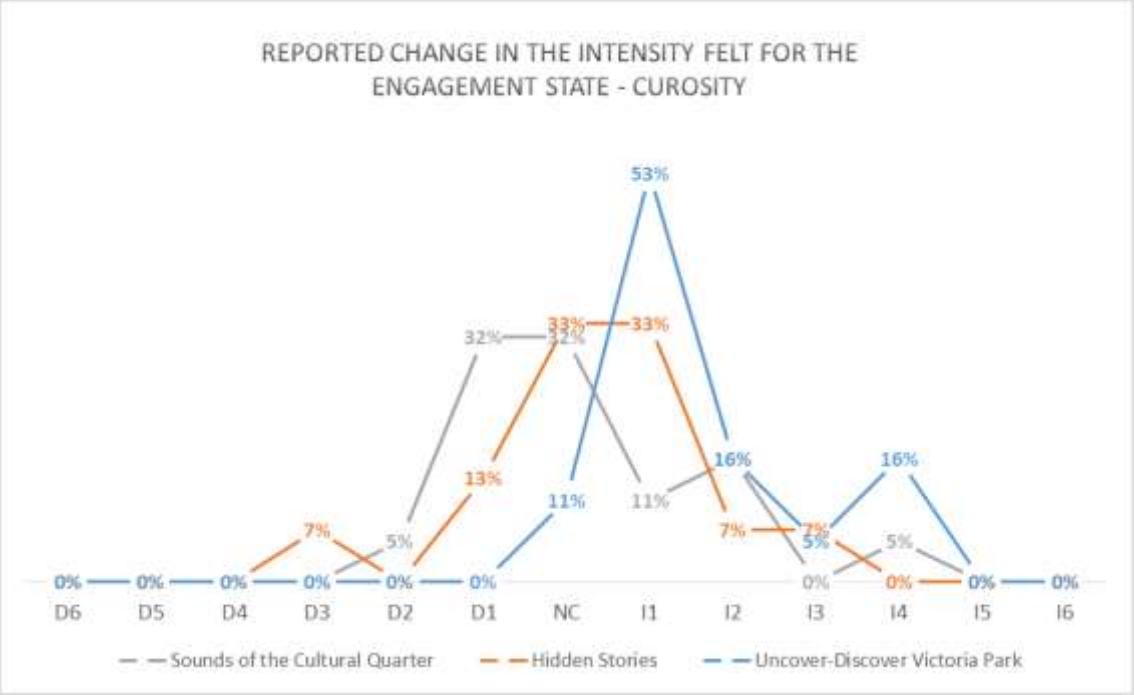


Figure 7-15 Comparison of findings - curiosity (Wilkinson, 2018)

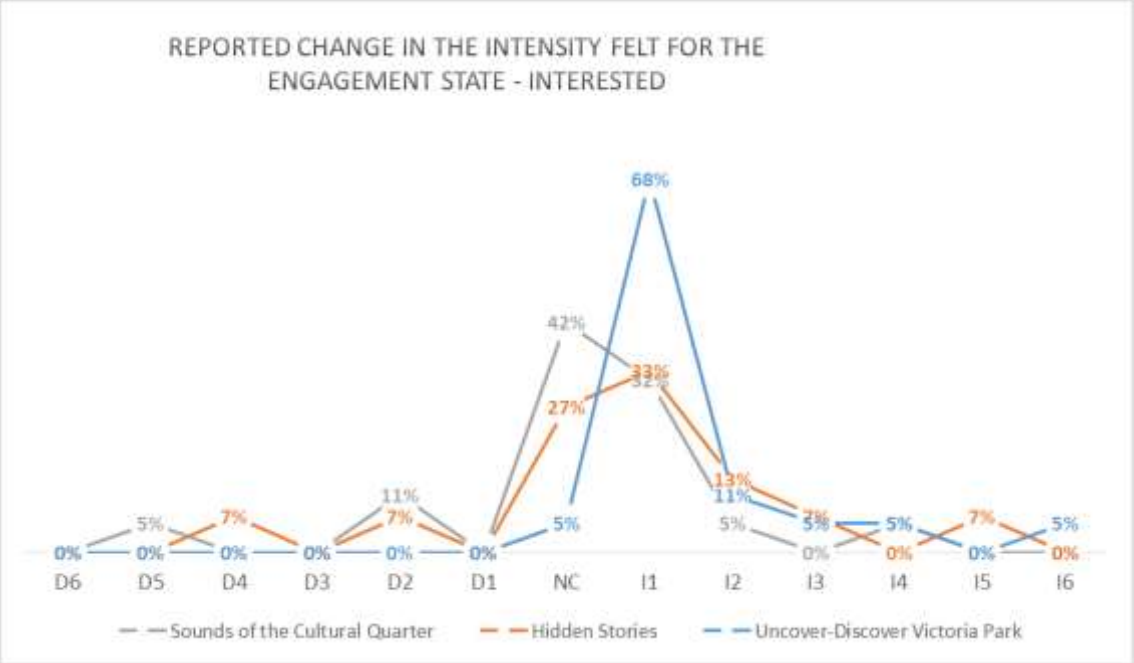


Figure 7-16 Comparison of findings - Interested (Wilkinson, 2018)

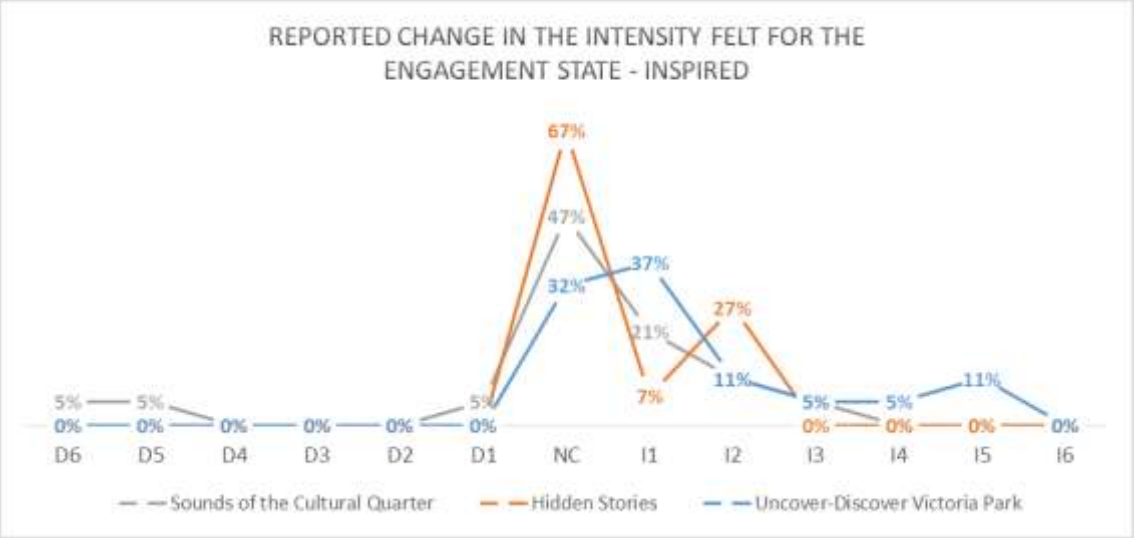


Figure 7-17 Comparison of findings - Inspired (Wilkinson, 2018)

The Victoria Park prototype reduced the intensity with which people felt negative engagement states such as *Bored*, *Dislike* and *Disconnected*. By contrast the *Sounds of the Cultural Quarter* and *Hidden Stories* apps increased the levels of negativity felt towards the location: in other words participants were more *bored* and more *disconnected* as a result of their visit to the Cultural Quarter than before their visit, figure 7-18 below.

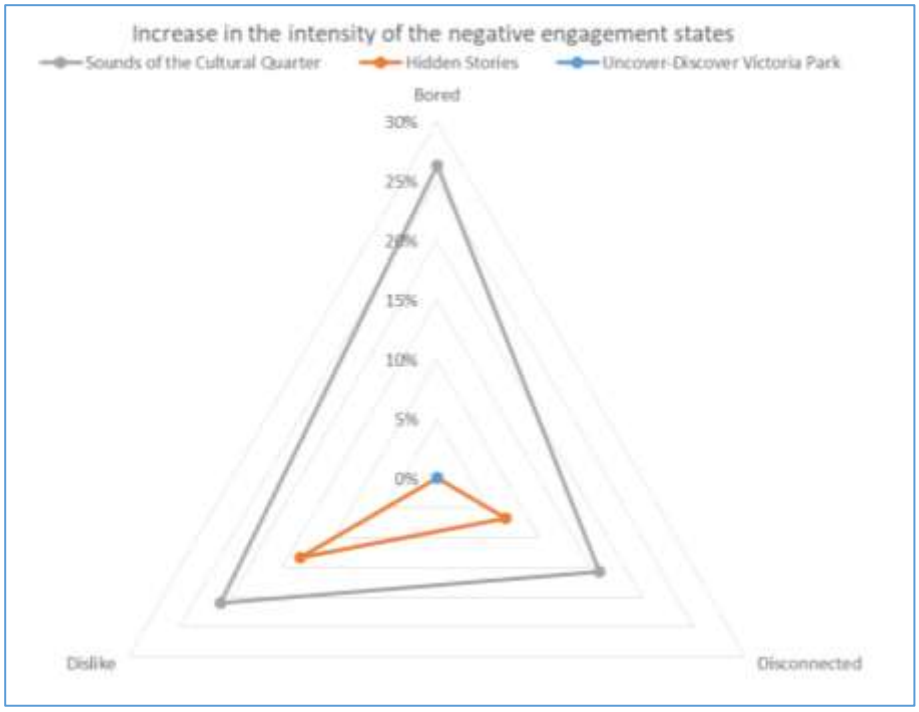


Figure 7-18 Comparison of findings for negative engagement states (Wilkinson, 2018)

Closer inspection and comparison of the results for movement within the engagement states of *liking* and *empathising*, being *interested*, *curious*, *inspired*, *involved, attentive, attracted* and *absorbed* provide further demonstration that the Victoria Park prototype was more successful than either the Hidden Stories app or the Sounds of the Cultural Quarter app in achieving movement within these engagement states. Table 7-31 below contains charts which illustrate a more consistent picture for the Victoria Park prototype with participant engagement **after** the visit (the orange line) being typically above the **before** visit scores (the blue line). Note that data comparison was done against the UK participants within the Mobile Apps study as this would provide a more accurate picture with results from a similar number of participants who typically share a similar demographic profile. The horizontal axis shows the participant identifier number and the vertical axis shows the level of registered intensity for the engagement state being measured.

Table 7-31 Engagement states comparison (Wilkinson, 2018)

Empathetic

Enjoyed

Inspired

Involved

Attentive

Attracted

Absorbed

Usability: The System Usability Scale (SUS) was used to measure participant perceptions of the usability of each app. To identify the SUS score participants are asked to rate 10 items on a 1-5 scale. After calculating average scores for each item the overall SUS usability score is obtained by using the following formula:

$$2.5 * \sum \frac{5}{i} = 1\big((S_{2i} - 1) + (5 - S_{2i})\big)$$

Where S1 to S10 are the average scores for item 1 to 10 of the scale. SUS scores range from 0 to 100 with scores of less than 50 considered unacceptable and scores of 70 or over acceptable. Scores between 50 and 70 are regarded as marginal. *Sounds of the Cultural Quarter* scored 65.70 and *Hidden Stories* scored 68.23 placing both apps in the high marginal range. By contrast the score for the Victoria Park prototype was 88.33

7.1.6.3 Being on Location (RQ11)

Analysis of the qualitative data demonstrates that using interpretive digital media on location adds significant value and provides a more engaging and powerful experience than other location specific methods or accessing the material at home. Mobile technology and digital media has a greater capacity to deliver the material the visitor wants, in a way that visitors want to use it and to the level that visitors find satisfactory than other methods such as leaflets, guides or interpretation boards. Being on location enhances the interpretation experience adding context and connection which cannot be achieved without visiting the site. CT19, CT29, CT48, CT49 and CT54: ‘’*Value of mobile’*; *Absorption’*; ‘*Context of location’*; ‘*the importance of visitor choice’* and ‘*the value of the app itself’* provide further illustration.

Being on location adds context and authenticity to the experience and increases engagement with the cultural heritage. Mobile digital media provides a convenient and effective way of delivering interpretation which can represent the heritage comprehensively in a variety of ways and can be adapted to suit the individual motivations, needs and personal preferences of the visitor.

"I would probably not stop and read a sign about the history if it was on the park, I would just, this is the thing...I couldn't be bothered to stop. I think usually when I go to the park I like walking around, or sitting somewhere. Purposefully going out of my way, stopping to read an historic sign, or many historical signs I would probably not do."

"I felt it more significant and more poignant when we were talking about the lady who was unfortunately killed that we were near, approximately near where that happened"

"Yeah I do think it makes a difference. Because you can feel the space. You can feel the space and how it feels and how big it was – sitting here and learning about the grandstand would have meant nothing, it's a 4 storey building – fine – 4 storey building. Seeing it in context on the park with the photographs that are on the app gives it more validity"

"I think I would sooner do it whilst I was there than do it when I got back home because I think you are in the place and you are in the moment whereas if I come back home I'm a little bit disconnected from the place"

"What a guide couldn't give you is the pictures – that's where you score with this and I think that because there isn't really a lot of landmarks left of it and with the pictures and the maps etc you can actually visualise it better than if somebody was wondering around and sort of saying, 'well over here' and – particularly if it's like 20 or 30 people in the group – I think that the IT expertise helps from that point of view"

"well you could put that on the net generally as an app and make it available and somebody down in Surrey could pick it up and explore it and find interest in it but they wouldn't have the context of sitting there and experiencing that sort of imaging what's going on"

"Well if it was just a book and I was reading it at home I wouldn't continue reading it – I'd get bored…but if you are immersed in it then I'm up for it"

7.1.7 Limitation of the study

Limitations of time restricted the number of visits which could be conducted by one researcher and limited the variety of visitors. The study group was limited to 19. A larger sample size might provide more diversity and include key groups which were missing from the study such as students, park runners, children or families.

The use of a mock-up product rather than a fully functioning app resulted in certain features, such as the attraction sounds being insufficiently tested. A fully operational programmed app with location-based functionality would allow more in depth testing of the location aware features and facilitate more observation of participant behaviour regarding their visit trajectory.

The majority of participants were either already interested in history and/or already familiar with and appreciative of the park. Study findings provide good information regarding the engagement of those who are potentially pre-disposed to being engaged with cultural heritage but provides only limited insight into the potential of the product to engage those with little interest in history or the park.

The guidance and framework were used by the researcher to create the prototype interpretive digital media but not a third party such as an independent designer or a cultural heritage practitioner. To explore the efficiency of the Guide further it would be appropriate to test its usage with independent creators.

7.1.8 Summary

This chapter has presented the results, analysis and findings of the Victoria Park study concluding that the engagement achieved with the prototype interpretive digital media is richer and deeper than the engagement reported prior to using the product.

Analysis of results from this study and comparison with the findings from the preliminary studies confirm that the Guide is effective in supporting the design and creation of effective interpretive digital media.

Being on location adds context and authenticity to the experience and increases engagement with the cultural heritage. Mobile digital media provides a convenient and effective way of delivering interpretation which effectively represents the heritage and can be adapted to suit the needs of the visitor.

8 Chapter Eight: Conclusions/General Discussions/Recommendations

8.1 Introduction

This chapter describes how the aim and objectives of this study have been met, how the research findings have been disseminated, how and what the study contributes to existing knowledge, and the limitations of the investigation. Conclusions on the research findings are provided and recommendations for further research are identified.

8.2 Outcomes and general discussion

As stated in section 1.3.2, page 1-12, the aim of this study was to develop guidance which could be used by cultural heritage practitioners and digital designers to support them in their creation of interpretive digital media products to deepen the engagement of visitors with outdoor, non-visible and un-stewarded cultural heritage. This aim has been achieved and the guidance has been developed.

The relationship between the visitor and the heritage location has been explored and this study confirms that being on location enriches visitor understanding and appreciation, creating deeper and more meaningful connections. The introduction of digital media to provide and support the interpretation of the heritage deepens the visitor experience and enhances the engagement of the visitor across all *stages* and *states* of engagement. This study confirms that that well designed interpretive digital media can enhance visitor engagement.

The absence of a definitive description to define and explain visitor engagement limits the ability to plan and design for engagement and the capacity to measure, test and evaluate the nature of its existence: this study proposes the guide as a way of addressing this gap. The engagement framework and the guidance are both formulated from the results of presented, peer reviewed and published research, (Higgett and Wilkinson, 2015), (Wilkinson, 2016) and can therefore be considered as robust and well-grounded.

Evaluation of the prototype Victoria Park has confirmed the effectiveness of using the guidance to design and create interpretive digital media. The researcher is confident that the guide and the framework will support cultural heritage practitioners and digital designers in their production of interpretive digital products capable of deepening visitor engagement.

8.3 Dissemination of the research

The researcher has published results from various parts of this study. To date this includes one book chapter (in publication), two conference presentations and two conference papers. Further presentations and papers are planned for 2018, post submission of this thesis. Details of the book chapter, papers and conferences are:

Book Chapter

Higgett, N. and Wilkinson J. (2018) "Digital Building Heritage" in Vergunst, J. and Graham, H. Heritage as Community Research: Legacies of Co-Production (pre publication)

Conference Presentations

- Connected Communities Heritage Network, January 2015, Sheffield
- Connected Communities Heritage Network Symposium, January 2016 Lincoln: *'Investigating the impact of mobile apps on the emotional reaction and engagement of visitors to the Cultural Quarter'*
- (Forthcoming) Connected Communities Heritage Network Symposium, June 2018 Leicester: *'Designing for Engagement: Introducing the Design Framework for Interpretive Digital Media'*
- (Forthcoming) East Midlands History Postgraduate Conference - 'Identity and Community in History', July 2018, Nottingham: *'The challenges of interpreting*

'invisible history' and re-imaging communities – can digital media help?'

Conference Papers

- Wilkinson, J. and Higgett, N. (2015) *Heritage Legacies: Digital Building Heritage Review CCHN2*, 16 January 2015, Sheffield

- Wilkinson, J. (2016) *Investigating the impact of mobile apps on the emotional reaction and engagement of visitors to the Cultural Quarter* CCHN3, 14-15 January 2016

8.4 Contributions to knowledge

Contributions to knowledge resulting from this study are now described.

8.4.1 The guidance

The guidance provides a resource pack for the design, development and implementation of projects to deliver interpretive digital media solutions. It includes template documentation and a range of tools, such as the engagement framework and the Location-Identify Grid, designed by the researcher to support a place-centred design approach. An example of this pack is available in Appendix 5A.

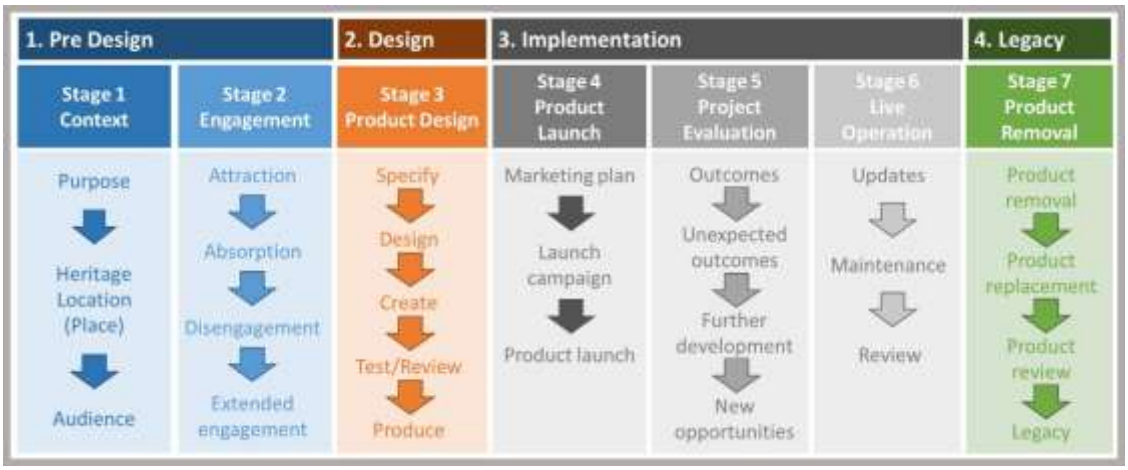


Figure 8-1 Project framework (Wilkinson,2018)

The guide includes a practical project framework (figure 8-1 page 8-394), which can be used by heritage practitioners and digital designers, to inform the whole project from

the design and creation of the product, through launch and implementation to eventual decommissioning.

The guide provides a visitor engagement framework (figure 8-2, page 8-395) and a definition of visitor engagement which can be used by researchers, cultural heritage practitioners and designers in the creation, production and evaluation of interpretive digital media.

“Visitor engagement is a transformational experience in which the visitor’s emotional and/or cognitive relationship with the heritage is altered. This is achieved when the visitor sufficiently experiences appropriate states of engagement across all stages of the visitor engagement framework, as determined by the creator of the interpretive media.” (Wilkinson, Designing for Interpretive Digital Media, 2018)

This framework defines *four* stages of engagement and 17 *states* of engagement with recommendations as to ways in which these can be achieved through features and functions included in the interpretive digital media, figure 8-3 page 8-396.

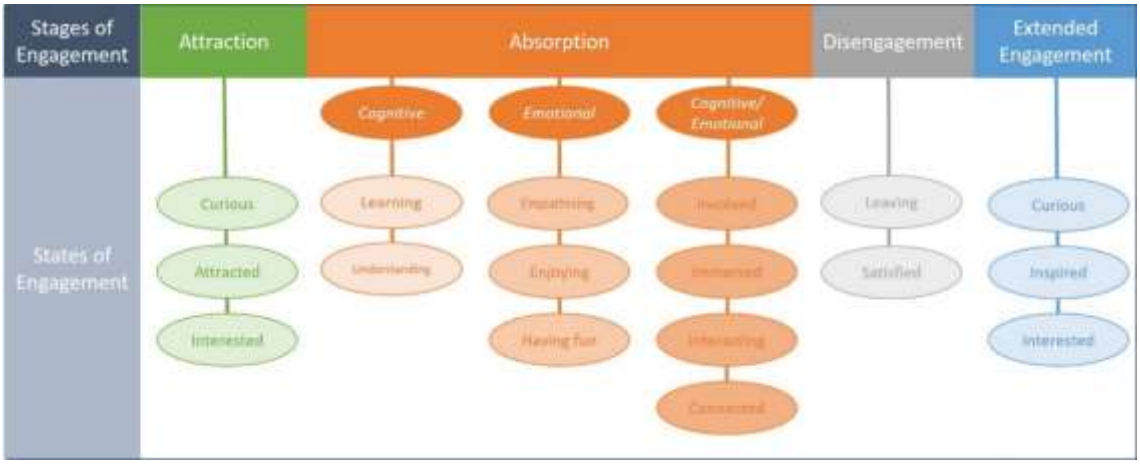


Figure 8-2 Visitor engagement framework (Wilkinson, 2018)

Design features to support Stages of Engagement	
Curious	Sound Instruction
Attracted	Sound Instruction Reward
Interested	Information
Learning	Information – authentic Information – sufficient Information – delivery matches to visitor learning preferences
Understanding	Information – integral to the heritage Information – meaningful to the visitor Information – immersive and evocative content
Empathising	Stories People/Characters
Enjoying	Challenging activity Sharing activity
Having Fun	Challenge activity Sharing activity Games Amusing activity
Involved	Interactive activity – listening/looking/touching/moving
Immersed	Sound Stories Visual information
Interacting	Looking / Reading / Listening / Discussing / Thinking
Connected	Information to relate the visitor with the heritage Activities to relate the visitor to the heritage
Leaving	Instruction Completion
Satisfied	Completion
Curious	Information Challenge
Inspired	Information Stories Characters Challenge
Interested	Information Stories

Figure 8-3 Design features and functions for States of Engagement (Wilkinson, 2018)

8.4.2 The Visitor Engagement Wheel

Based on the Geneva Emotion Wheel (Scherer, 2005) the researcher created a similar tool to test levels of visitor engagement: The Visitor Engagement Wheel (figure 8-4, page 8-397). The mechanics of this wheel and it is used are adapted from the Geneva Emotion Wheel. The '*states'* of engagement are derived from the results of the literature review on visitor studies and engagement. This wheel was initially used in the Mobile Apps study then adjusted for use in the Victoria Park study (figure 8-5, page 8-397). It proved to be a useful tool in gathering quantitive data on the extent to which visitors felt engaged with the heritage.

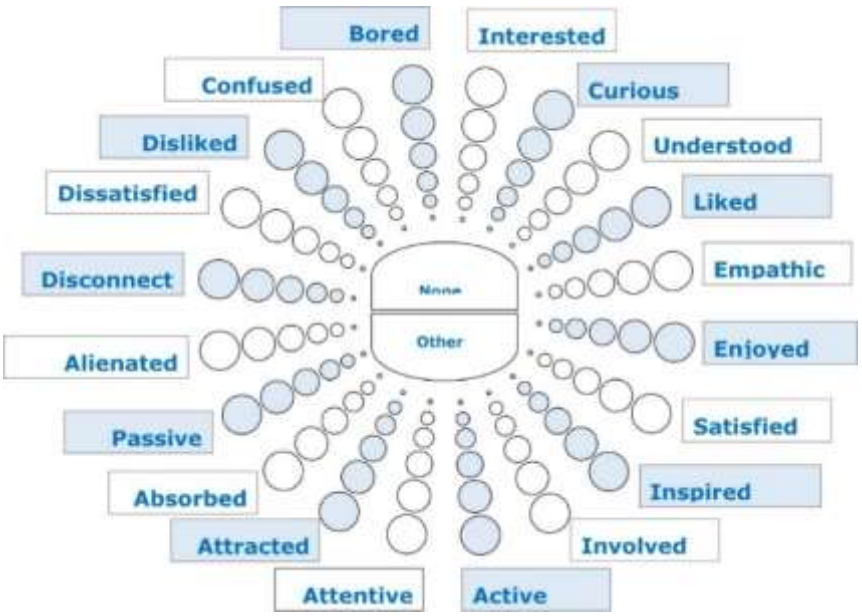


Figure 8-4 Mobile Apps Visitor Engagement Wheel (Wilkinson, 2018)

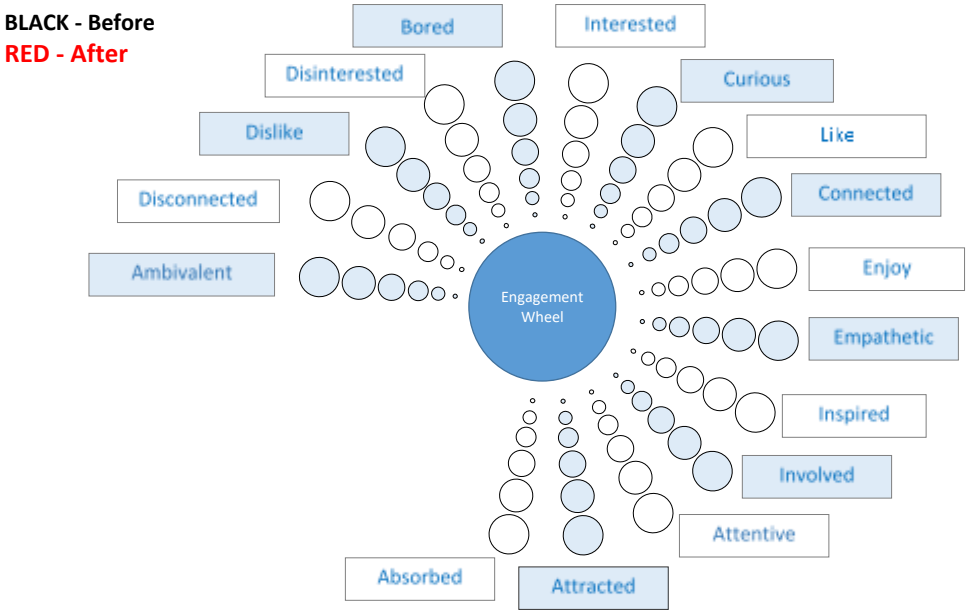


Figure 8-5 Victoria Park Visitor Engagement Wheel (Wilkinson, 2018)

8.5 Limitations of the research

Challenges to the project and limitations of the research are now described below.

This study spans six years during which the advances in digital technology have been immense, particularly in relation to mobile/smart phone functionality and affordance.

The researcher believes that personal attitude towards and acceptance of mobile/smart phone apps has altered over the period of this study and that these developments could have a bearing on some of the issues discussed in this thesis, for example, people are perhaps more comfortable using their phones for taking photographs and social media in 2018 than they were at the start of the project in 2012. To negate the impact and influence of issues relating to mobile phones the researcher specifically chose not to develop a mobile/smart phone app or refer to the prototype as an app but to present the interpretive digital media on a tablet platform to ensure that the focus of the study remained on the principles of good digital design for engagement rather than matters relating to mobile phones. As a result this study does not address issues which might be specific to mobile/smart phones and there could be additional questions regarding engagement through interpretive digital media delivered on mobile phone platforms which are not addressed by this study.

Speed of change is an important factor to consider in relation to this study. The researcher is aware that, within the timescale of this investigation, technological change and progress has been constant and that more interpretive digital media products have been created which she has not been able to examine or review. It is possible and indeed likely that some of the issues identified in the preliminary studies and in particular the case studies may have been surpassed and addressed by more recently launched interpretive digital media products.

The guidance and engagement framework have all been used and tested by the researcher, but not by the intended audience of cultural heritage groups or designers. There may be oversights and gaps in the design of these frameworks which have not been identified by the researcher but would be apparent to the intended audience.

The *states* of engagement have been identified through research into a range of interpretive digital media products and projects, however this range is limited to that which could be accomplished by one researcher and may not be representative of a complete range of interpretive digital media products. Consequently the researcher

recognises that the current set of 17 engagement *states* might not be sufficient and is almost certainly not exhaustive.

The study has been particularly successful in achieving and demonstrating the cognitive *states* of engagement. This focus corresponds to the design decision made by the researcher in developing the prototype interpretive digital media and was in accordance with the findings of the visitor interest survey, however this means that less is known about the effectiveness of design features in meeting the *emotional* states of engagement.

The guidance has been tested by the design and development of the prototype, however the focus of this study has been on Stages 1 Pre Design and 2 Design of the project framework. Stages 3 Implementation and 4 Legacy remain untested.

The participant group for the evaluation of the prototype product was largely comprised of people who were known to the researcher, which might have resulted in some degree of bias in participants wanting to provide a favourable review of the product. Other limitations with the group such as their possible predisposition to liking history and not being representative of all the different users of the Park have been discussed in 7.1.7 page 7-390.

8.6 Recommendations

A list of recommendations for the outcomes of this study is now presented.

8.6.1 Recommendations for the guidance

The latter phases of the project framework, Phase 3 Implementation and Phase 4 Legacy should be further developed and enhanced to the same level of detail as Phase 1 Pre Design and Phase 2 Design to create a more comprehensive framework.

The guidance should be tested by cultural heritage practitioners and digital designers to ensure functionality and impact, revised appropriately, then published and promoted for use within the heritage sector.

The guidance should be extended with the development of an evaluation of engagement tool within Stage 5 of the project framework which could be used by researchers and cultural heritage practitioners to assess the validity and effectiveness of interpretive digital media products.

8.6.2 Recommendations for the Victoria Park prototype

The positive reception of this product by the research participants would suggest that there is value in developing and implementing a functioning version of the Victoria Park product. Consideration should be given to as how this might be achieved including how the product might be funded and appropriately programmed to become a working smart phone app. Links could be made with local heritage groups to support this venture.

8.6.3 Recommendations for further research

Further research is required to address the limitations of this study regarding the number of proposed *states* of engagement in the visitor engagement framework to either identify more states for inclusion or confirm the completeness of the current 17 states. To achieve this the framework could be employed to test other existing interpretive digital media products, particularly those which have been launched recently and have fallen outside of the time frame for inclusion in this study.

If the Victoria Park prototype was implemented as a functioning smart phone app, as suggested in 8.6.2 page 8-400 this would allow for further research to be conducted and could address some of the limitations identified in 8.6, for example research could be undertaken with a broader pool of participants.

Additional research is required into the final stage of the framework, *Extended Engagement* as this was not sufficiently addressed as part of this study. This would require a longer term investigation to understand if and how participants continue their relationship with the cultural heritage location after their visit and what benefit this brings to them and/or the heritage location.

Further research is required to inform the development of Phase 3 Implementation and Phase 4 Legacy and to evaluate the resulting enhanced project framework . This would require a long term investigation as the study would need to address not only the design of the interpretive digital product but also its usage, impact, removal and legacy.

Further research is needed to develop appropriate evaluation tools for visitor engagement based on the engagement framework. The *Visitor Engagement Wheel* should be reviewed and adapted to more closely match the engagement states.

8.7 Conclusion

This study was motivated by concerns that digital media products were being developed for museums and cultural heritage groups but that the potential for these products to engage visitors with the heritage in a rich and meaningful way, commensurate with the technical and functional abilities of the products, was not being realised. Digital media products were being funded, commissioned, launched and installed in museums and cultural heritage sites but the capacity of these items to deliver strong visitor engagement experiences was not necessarily demonstrated. Furthermore the term engagement, whilst widely used, lacked an acknowledged definition or shared and accepted understanding. Identifying and measuring engagement was nebulous and largely intangible.

This study has provided a definition of engagement which can be used to help design and evaluate interpretive digital media products by supporting researchers and cultural heritage practitioners in creating digital media solutions capable of delivering more substantial visitor engagement experiences.

In proposing guidance for the process of designing, delivering and managing digital interpretive media this study provides a resource for the cultural heritage practitioner, grounded in sound and robust research, capable of supporting them through the whole project life cycle. In using guidance the cultural heritage practitioner can be confident of their capacity to run and deliver interpretive digital projects regardless of their expertise in design or technology.

Finally this study proves that well designed interpretive digital media can engage visitors in a meaningful way. Good design which addresses engagement and provides the right functions and features, plus effective project management of the interpretive digital media project will result in a product which is capable of optimising the engagement of visitors with cultural heritage. Interpretive digital media has the unique potential to represent heritage and to enrich the visitor experience: well-designed interpretive digital media which utilises the frameworks and guidance proposed by this study has the capacity to achieve this potential and optimise the engagement of the visitor in ways which cannot be achieved by any other single method of interpretation.

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